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NOTES

FROM THE

ROYAL BOTANIC GARDEN, EDINBURGH.

VOL. X.

Including Numbers XLVI-L.

1917-1918.

EDINBURGH:
PRINTED UNDER THE AUTHORITY OF HIS MAJESTY'S STATIONERY OFFICE
BY NEILL & CO., LIMITED,
AT 212 CAUSEWAYSIDE.

SOLD AT THE GARDEN,
And to be purchased, either directly or through any Bookseller, from
H.M. STATIONERY OFFICE (SCOTTISH BRANCH),
23 FORTH STREET, EDINBURGH.

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D. 90

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Numbers XLVII–XLVIII, pp. 79–166 for November 1917.
Numbers XLIX–L, pp. 167–220 for July 1918.

Wt. 6280/135—375—10/18.—N. & Co., Ltd. Gp. 10.

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DIAGNOSES

Specierum novarum
in herbario Horti Regii Botanici Edinburgensis cognitarum.
CCLI–CCCL.

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156 **Acanthopanax evodiaefolius,** Franch., var. **ferrugineus,** W. W. Sm. Var. nov.

A typo foliolis ad costam nervosque rufo-tomentellis, pedunculis pedicellisque rufo-pilosulis recedit ; cetera cum typo congruunt.

" China :—Shweli-Salween divide, Yunnan. Lat. 25° 20′ N. Alt. 8000 ft. Shrub of 12–18 ft. Flowers olive-green, anthers yellow. In open thickets. Aug. 1913." G. Forrest. No. 12,068.

" Upper Burma :—Naung-Chaung ridge, Nwai divide. Alt. 9000–10,000 ft. Big tree in dry forests. June 1914." F. Kingdon Ward. No. 1707.

154 Var. **gracilis,** W. W. Sm. Var. nov.

A typo foliis saepe 5-foliolatis ad axillas nervorum ferrugineo-tomentosis, umbellis paucifloris, pedunculis gracilibus strictis, pedicellis fructiferis ad 3.5 cm. longis recedit.

" China :—Lichiang Range, Yunnan. Lat. 27° 40′ N. Alt. 11,000 ft. Shrub of 20 ft. In fruit, fruits purple. Shady thickets. Sept. 1913." G. Forrest. No. 11,282.

1160 **Acanthopanax gracilistylus,** W. W. Sm. Sp. nov.

Species valde affinis *A. Rehderiano,* Harms, quoad habitum foliaque simillima sed inter alia stylis duobus longiusculis gracillimis liberis bene notata.

Frutex 2–3 m. altus ramulis tenuibus glabris cinereis vel brunnescentibus, aculeis paucis 3–4 mm. longis validiusculis recurvatis. Folia petiolis 3–5 cm. longis laminam superantibus glabris praedita ; foliola 5, subsessilia, majora plerumque 3–3.5 cm. longa, circ. 1.2 cm. lata, obovata vel oblanceolata, acuta vel breviter acuminata, basi cuneata, dimidio superiore crenato-

serrulata serraturis incurvis, ad insertionem petiolulorum sparsim ferrugineo-tomentella, supra atroviridia glabra, infra multo pallidiora, ad axillas nervorum ferrugineo-tomentella, nervulis bene reticulatis subtus in sicco subconspicuis. Umbellae in ramulis multo abbreviatis 1–2-natae, nec terminales, pedunculo (fructifero) 3–5 cm. longo glabro suffultae ; pedicelli 6–10 mm. longi glabri gracillimi ; styli 2, gracillimi, liberi, circ. 2 mm. longi. Fructus circ. 6 mm. longus, 5 mm. latus, complanatus, niger ; loculi 2 ; semina albumine uniformi praedita.

"China :—Mountains in the N.E. of the Yangtze bend, Yunnan. Lat. 27° 45′ N. Alt. 9000–10,000 ft. Shrub of 6–10 ft. In fruit. In open thickets. July 1913." G. Forrest. No. 10,411.

"Mekong-Yangtze divide, Yunnan. Lat. 27° 40′ N. Alt. 10,000 ft. Spinous shrub of 6 ft. Fruits black. Open situations amongst rocks. July 1914." G. Forrest. No. 12,858.

Acanthopanax Wardii, W. W. Sm. Sp. nov.

Species affinis *A. trifoliolato*, Schneider sed ramulis inermibus, foliolis integris inter alia recedit ; ab *A. lasiogyne*, Harms foliolis semper integris ovario glabro praeter alia signa differt.

Frutex 1–3 m. altus ramulis glabris cortice pallide cinereo praeditis ; aculei in speciminibus nostris nulli. Folia petiolo 2–4 cm. longo glabro suffulta ; foliola 3, sessilia, plerumque 3–5 cm. longa, 1.5–3 cm. lata, ovata vel oblongo-ovata vel obovata, apice obtusa vel acutiuscula, basi late cuneata, margine integra, siccando papyracea, ad insertionem foliolorum sparsim tomentella, cetera glaberrima, supra viridia infra pallidiora nervis nervulisque immersis. Umbellae 4–6-natae, terminales pedunculo communi deficiente, densiflorae ; pedunculi ad 2 cm. longi glabri nisi ad insertionem pedicellorum tomentellam ; pedicelli 5–10 mm. longi glabri haud articulati. Calycis margo minute villosulus lobis vix evolutis ; petala triangularia viridia vel viridi-alba ; stamina 5 ; ovarium glabrum apice excepto, biloculare ; styli 2, basi paululum connati, multum recurvati ; fructus circ. 7 mm. longus et latus, atro-purpureus, multum complanatus ; semina albumine uniformi praedita.

"China :—N.W. Yunnan, 8500 ft. Bushy shrub, 4–8 ft., by torrent. September 1913." F. Kingdon Ward. No. 1098.

"Bei-ma Shan, Mekong-Yangtze divide, Yunnan. Lat. 28° 20′ N. Alt. 10,000 ft. Shrub of 6–9 ft. Flowers green, anthers creamy-white. Open situation amongst scrub and rocks. Aug. 1914." G. Forrest. No. 13,282.

"Ghi Shan, east of Tali Lake, Yunnan. Lat. 25° 48′ N. Alt. 9000 ft. Shrub of 10 ft. Fruits black-purple. In open thickets. Sept. 1914." G. Forrest. No. 13,537.

Acer Wardii, W. W. Sm. Sp. nov.

Species birmanica distinctissima ; ab *Aceribus* indo-birmanicis aliquatenus remota ; ex affinitate *A. sinensis,* Pax esse videtur sed foliis trilobis, floribus valde diversis inter alia differt.

Arbor parva 8–11 m. alta ramulis hornotinis glabris. Folia membranacea vel tenuiter chartacea petiolo 3–4 cm. longo gracili suffulta ; lamina 5–9 cm. longa, 6–9 cm. lata, basi cordulata, ad duas partes trilobata, supra glabra, infra glabra nisi ad nervos tres primarios sparsim fulvo-pilosos ; lobi lanceolati longe acuminati (medianus aliis paulo major), margine ex toto crebre et argute serrulati serraturis apiculatis ; nervi in sicco plus minusve conspicui. Inflorescentia (mascula tantum visa) terminalis cum pedunculo circ. 2 cm. longo ad 7 cm. longa breviter paniculata bracteis linearibus 7–8 mm. longis ornata glabra ; pedicelli circ. 5 mm. longi. Flores 5-meri. Sepala 2–3 mm. longa linearia. Petala sepalis plus minusve similia. Stamina 8 in medium discum inserta, circ. 1 mm. longa. Fructus deest.

" Upper Burma :—Small tree of 25–35 ft. Open drier parts of forest at 9000–10,000 ft., near Htawgaw, valley of Naung-Chaung, Lashi country. May 1914." F. Kingdon Ward. No. 1614.

An interesting addition to the flora of Burma. Unfortunately only withered male flowers are available in the specimen.

Arisaema candidissimum, W. W. Sm. Sp. nov.

Inter species chinenses spatha alba roseo-suffusa bene notata.

Planta circ. 30 cm. alta. Tuber depresso-globosum 3–4 cm. diametro. Folia petiolo ad 30 cm. longo praedita ; lamina trifoliolata vel ad duas partes vel ad medium subirregulariter 3-partita raro subsimplex ; foliola suborbicularia vel late ovata, 8–18 cm. longa et lata, apice breviter et abrupte cuspidata, basi plus minusve rotundata petiolulis nullis vel subnullis, in sicco tenuiter membranacea, subtus glaucescentia nervis lateralibus pluribus conspicuis. Pedunculus petiolum plus minusve aequans. Spatha masculina ad 14 cm. longa alba roseo-suffusa ; pars quasitubulosa 2.5–3 cm. longa, circ. 2 cm. lata ; lamina ovato-lanceolata longe acuminata, medio ad 5 cm. lata, delicatissime membranacea ; spadix circ. 6 cm. longus apice obtusus. Flores feminei desunt.

" China :—Fengkow Valley, N.W. Yunnan. Lat. 27° 40′ N. Alt. 8000–9000 ft. Plant of 9–12 inches. Spathe white, faintly flushed rose. Open dry rocky situations and on ledges of slate cliffs. June 1914." G. Forrest. No. 12,724.

A very beautiful species. I am informed by Mr. Forrest that he only saw the plant once, and he believes it is rare in Yunnan.

Berchemia nana, W. W. Sm. Sp. nov.

Species ex affinitate *B. lineatae*, DC. a qua habitu prostrato, ramulis stipulis persistentibus plus minusve obsitis, sepalis petala staminaque distincte superantibus inter alia recedit.

Fruticulus prostratus ramis 30–40 cm. longis ; ramuli glabri stipulis conspicuis membranaceis diu persistentibus ad 5 mm. longis lanceolatis longe acuminatis plus minusve celati. Folia tenuiter papyracea petiolo circ. 2 mm. longo glabro suffulta ; lamina plerumque 5–8 mm. longa, 4–6 mm. lata, ovalia, apice rotundata mucronulata, basi rotundata vel subrotundata, utrinque glabra, supra viridis infra pallidior vix papillosa, nervis vulgo 4 paribus. Inflorescentiae parvae inter folia plus minusve celatae ; flores axillares solitarii racemulos 2–3-floros foliatos formantes ; pedicelli 2–3 mm. longi glabri basi stipulis obsiti. Alabastra subglobosa, apice obtusiuscula. Sepala circ. 4 mm. longa triangularia acuminata glabra ; petala multo minora anguste obovalia albida ; stamina petalis paululo breviora. Fructus deest.

" China :—Eastern flank of the Lichiang Range, Yunnan. Lat. 27° 30′ N. Alt. 10,000–11,000 ft. Prostrate shrub of 12–16 inches. On the faces of cliffs. Flowers yellowish-white. Aug. 1910." G. Forrest. No. 6288.

Botryopleuron yunnanense, W. W. Sm. Sp. nov.

Species affinis *B. axillari*, Hemsl. et *B. latifolio*, Hemsl. a quibus habitu suffruticoso scandente, ramis petiolisque fulvo-pilosulis, inflorescentiis ramulos breves terminantibus differt.

Fruticulus scandens 1.2–2.4 m. altus ramis gracilibus plus minusve fulvo-pilosulis. Folia alterna petiolo 3–5 mm. longo dense fulvo-pilosulo praedita ; lamina ad 5 cm. longa, ad 2.5 cm. lata, ovata, apice sensim et longiuscule acuminata, basi rotundata, margine serraturis apiculatis serrata, in sicco membranacea, supra atroviridis lucida ad costam fulvo-pilosula ceterum glabra, infra pallidior ad costam nervosque sparsim fulvo-pilosula, nervis primariis utrinque 3–4 subtus subconspicuis. Inflorescentiae dense spiciformes 2.5–5 cm. longae ramulos breves (ad 2.5 cm. longos), dense fulvo-pilosulos terminantes ; flores subsessiles saturate coerulei ; bracteae subulato-lineares ad 5 mm. longae ; calycis fere ad imum fissi lobi sublineares 3–4 mm. longi ciliolati ; corollae 5–6 mm. longae tubus cylindricus, intus barbatus, lobi circ. 2 mm. longi lanceolati acuti. Stamina 2 longe exserta medio barbata. Capsula circ. 2 mm. longa oligosperma seminibus globosis brunneis circ. 0.25 mm. diametro.

" China :—Taping-pu Valley, Yunnan. Lat. 25° 30′ N.

Alt. 7000–8000 ft. Scandent shrub of 4–8 ft. On scrub. May 1913." G. Forrest. No. 9898.

"Valley of the Mekong on the Tengyueh-Talifu route, Yunnan. 5000 ft. Procumbent plant, flowers deep rich blue. Aug. 1904." G. Forrest. No. 623.

Brandisia praticola, W. W. Sm. Sp. nov.

Species affinis *B. Hancei,* Hook. f. et *B. roseae,* W. W. Sm. sed multo minor; foliis floribusque abunde differt.

Fruticulus circ. 60 cm. altus erectus supra fastigiato-ramosus; ramuli graciles furfuraceo-pubescentes. Folia brevissime vel vix petiolata; lamina lineari-lanceolata vel lineari-oblonga, vulgo 3–4 cm. longa, 6–8 mm. lata, apice plus minusve acuta, basi cuneata, in sicco submembranacea, utrinque furfuraceo-pubescens nervis subtus elevatis. Flores in axillis superioribus solitarii inflorescentiam laxam paniculatam e racemis brevibus compositam formantes; folia regionis floralis inferioribus paulo minora caeterum similia; pedicelli circ. 5 mm. longi bracteolis binis spathulatis vel linearibus 2–7 mm. longis saepe deficientibus apice praediti. Calyx campanulatus circ. 1.5 cm. longus ad trientem in lobos triangulares acutos fissus extus minute puberulus levissime 10-costatus. Corolla e calyce paululo exserta tubulosa leviter curvata tubo circ. 1 cm. longo extus intusque puberulo vel glabrescente, labio postico 7–8 mm. longo vix emarginato potius subintegro, antico minore 3-lobo intus longiuscule albo-pilosulo. Filamenta complanata; antherae albo-barbatae confluentes. Stylus pilosulus ovario dense tomentoso.

"China:—Mekong-Salween divide, Yunnan. Lat. 28° 10′ N. Alt. 9000 ft. Plant of 2 ft. Flowers dull purple. Open stony pasture. Sept. 1914." G. Forrest. No. 13,350.

Brandisia rosea, W. W. Sm. Sp. nov.

Species ex affinitate *B. Hancei,* Hook. f. a qua foliis lanceolatis cuneatis, calyce bilabiato, corolla rosea inter alia facile distinguitur.

Frutex 1–2 m. altus erectus vel suberectus ramulis dense albo-stellato-tomentosis. Folia petiolo 4–5 mm. longo tomentoso suffulta; lamina lanceolata, 4–5 cm. longa, 1–1.5 cm. lata, acutissima, basi cuneata, in sicco chartacea, supra atroviridis sparsim stellato-puberula glabrescens, infra dense albo-tomentosa, nervis supra vix impressis vulgo 1–2 paribus. Flores axillares solitarii vel bini saturate rosei pedunculis 4–8 mm. longis bibracteatis tomentosis suffulti. Calyx campanulatus 7–8 mm. longus ad trientem bilabiatus dentibus obsoletis vel brevibus, extus albo-tomentosus intus dense pilosus. Corolla

2–2.5 cm. longa, tubulosa, curvata, extus dense tomentella basi ipsa excepta, tubo 5–7 mm. diametro intus glabro, labio postico circ. 4 mm. longo emarginato, antico minore 3-lobo, ambobus utrinque tomentellis. Antherae dense et longiuscule barbatae. Stylus pilosulus ovario dense tomentoso.

"China :—Western flank of the Tali Range, Yunnan. Lat. 25° 40′ N. Alt. 10,000 ft. Shrub of 3–5 ft. Flowers deep rose. Open dry situations amongst scrub. July 1913." G. Forrest. No. 11,565.

This new species is nearest to *B. Hancei*, Hook. f., from which it differs in foliage, calyx, and corolla.

1303 **Brassaiopsis coriacea,** W. W. Sm. Sp. nov.

Species affinis *B. floribundae*, Seem. a qua foliolis coriaceis integris, inflorescentia praelonga corymboso-paniculata praeter signa minora differt ; a *B. speciosa*, Dcne. et Planch. specie javanica inflorescentia imprimis discrepat.

Frutex 4–10 m. altus. Folia ampla petiolo ad 60 cm. longo cito glabrescente suffulta digitata ; petioluli 5–7 cm. longi primum tomento ferrugineo induti mox glabrescentes ; foliola 7–9, ad 22 cm. longa, ad 9 cm. lata, plus minusve elliptica, apice breviter et subabrupte acuminata, basi late cuneata, margine integra vel raro denticulis minutis remotis obscure notata, in sicco alutacea, supra glabra vel hic illic reliquiis tomenti conspersa, infra subglabra tomento ferrugineo cito delapso ; nervi circ. 12 paria et costa subtus prominula reticulo nervulorum utrinque subconspicuo. Inflorescentia ampla ad 60 cm. longa, e basi corymboso-paniculata, ramis ramulisque primo ferrugineo-tomentosis sub fructum fere glabris, bracteis ovatis plus minusve persistentibus ; umbellae fructiferae circ. 5 cm. diametro multiflorae pedicellis fere 2 cm. longis cum bracteolis ferrugineo-tomentellis. Fructus globosus circ. 6 mm. diametro disco plano coronatus bilocularis ; stylus simplex 2 mm. longus.

"China :—Shweli Valley, Yunnan. Lat. 25° N. Alt. 5000 ft. Shrub on tree of 15–35 ft. In fruit. Open situations. June 1912." G. Forrest. No. 8297.

"Hills to the N.E. of Tengyueh, Yunnan. Lat. 25° 10′ N. Alt. 6500 ft. Shrub of 12–20 ft. In forest. Open situations. Aug. 1912." G. Forrest. No. 8856.

1316 **Brassaiopsis dumicola,** W. W. Sm. Sp. nov.

Species affinis *B. hispidae*, Seem. a qua petalis extra albido-tomentellis inter alia signa recognoscitur.

Frutex 6–9 m. altus ramis crassis cicatricibus perlatis vaginarum delapsarum notatis apice primo ferrugineo-tomentellis ;

aculei numerosi saepe robusti. Folia 30 cm. vel ultra diametro, petiolo 9–15 cm. longo ferrugineo-tomentello suffulta, alte palmato-lobata, basi cordatula, in sicco firme papyracea, primo utrinque tomento albido vel saepius ferrugineo stellato induta, mox glabra vel glabrescentia; pars integra circ. 1 cm. alta; lobi circ. 9, oblongi, ad 18 cm. longi, ad 4 mm. lati, apice longiuscule acuminati, basi multo excisi pseudo-petiolulos formantes, margine subspinoso-serrulati; nervi subtus prominuli; stipularum apices liberi circ. 1 cm. longi subspinescentes. Inflorescentia elongata rigida angusta; rhachis ad 35 cm. longa, crassissima primo tomentella mox glabrescens unde fere angulo recto oriuntur pedunculi crassi 3–5 cm. longi pauciramosi vel simplices bracteis ovatis ornati; pedicelli vix 1 cm. longi dense ferrugineo-tomentelli; umbellae multiflorae ad 3 cm. diametro. Calycis dentes bene evoluti circ. 1 mm. longi acuti tomentelli; petala 5, 3.5 mm. longa, triangulari-ovata, extra albido-tomentella viridi-lutea. Ovarium primo albido- vel ferrugineo-tomentellum, obconicum, circ. 4 mm. longum, 2–3-loculare; discus planus paululo ultra calycis marginem protrusus medio depressus, unde stylus simplex vix 2 mm. longus.

"China :—Ma-chang-kai Valley, N. of Tengyueh, Yunnan. Lat. 25° 20′ N. Alt. 6000 ft. Spinous shrub of 20–30 ft. Flowers greenish-yellow. In thickets. Feb. 1913." G. Forrest. No. 9671.

Brassaiopsis palmipes, G. Forrest. Sp. nov.

Species valde affinis *B. trevisioidi,* W. W. Sm. infra descriptae a qua foliolorum lobis oblongo-ellipticis pseudo-petiolulatis (ut saepe in *Trevesia*) inter alia differt.

Frutex 6–9 m. altus ramis crassis aculeatis. Folia (minora) 30–35 cm. diametro, petiolo 12–25 cm. longo primum ferrugineo-tomentello nonnunquam praesertim ad apicem aculeato praedita, alte palmato-lobata, basi cordata, in sicco submembranacea, supra aculeolis sparsis notata atque hic illic parce puberula, infra initio dense ferrugineo-tomentella, mox glabrescentia; pars integra 5–7 cm. alta, orbicularis margine integro; lobi 8–11, oblongo-elliptici, vulgo 10–15 cm. longi, 5–7.5 cm. lati, apice rotundati saepe abrupte acuminati, basi rotundati ad costulam excisi, margine subspinuloso-serrulati; nervi subtus aliquatenus prominuli; stipularum apices liberi subulato-lanceolati. Inflorescentiae quoad formam et magnitudinem cum eis *B. trevesioidis* quadrant; pedicelli ferrugineo-puberuli; flores 5-meri; calycis dentes brevissimi acuti; petala extra parce tomentella; ovarium vulgo 2-loculare, nonnunquam 3-loculare, stylo simplici vix 2 mm. longo coronatum.

"China :—Shweli Valley, Yunnan. Lat. 25° N. Alt. 5000

ft. Shrub of 20–30 ft. In thickets. May 1912." G. Forrest. No. 7887.

[The above species is very near *B. trevesioides*, W. W. Sm., and is found in the same region. I did not see, however, any evidence of intermediates, and the leaf-form is very extraordinary.—G. F.]

1319 **Brassaiopsis shweliensis,** W. W. Sm. Sp. nov.

Species affinis *B. aculeatae*, Seem. a qua foliolis coriaceis facile distinguenda est.

Frutex circ. 7.5 m. altus ramis crassissimis hic illic aculeatis. Folia ampla petiolo ad 40 cm. longo ferrugineo-tomentoso cito glabrescente praedita digitata; petioluli circ. 1 cm. longi ferrugineo-tomentelli mox subglabri; foliola 6–7, ad 24 cm. longa, ad 7 cm. lata, apice plus minusve longe acuminata, basi anguste cuneata, margine (dimidio superiore) indurato-serrata, coriacea, primum tomento stellato ferrugineo vel albido conspersa, tandem glabra; costa nervique 12–15 paria subtus eminentes reticulo nervulorum subconspicuo. Inflorescentia ampla circ. 30 cm. longa; rhachis crassa primum tomentella mox glabrescens rugosissima unde oriuntur fere recto angulo pedunculi numerosi circ. 2.5 cm. longi crassi umbellam multifloram solitariam gerentes, bracteis circ. 1.5 cm. longis coriaceis persistentibus cymbiformibus incurvis apice indurato-acutatis praediti; pedicelli circ. 1 cm. longi ferrugineo-tomentelli. Calycis dentes circ. 1 mm. longi acuti; petala non visa; fructus globosus circ. 7 mm. diametro bilocularis, tomento tenui crustaceo tandem deciduo indutus, disco hemisphaerico stylo simplici 2 mm. longo.

"China :—Shweli Valley, Yunnan. Lat. 25° N. Alt. 6000 ft. Shrub of 25 ft. In fruit. Open situations in thickets. July 1912." G. Forrest. No. 8702.

1320 **Brassaiopsis trevesioides,** W. W. Sm. Sp. nov.

Species ex affinitate *B. mitis*, Clarke et *B. fatsioides*, Harms; folia eis *Trevesiae palmatae*, Vis. subsimilia.

Frutex 6–9 m. altus. Aculei desunt. Folia 40 cm. vel ultra diametro petiolo circ. 40 cm. longo sparsim furfuraceo-tomentello mox glabrescente suffulta, alte palmato-lobata, basi cordata, in sicco papyracea, utrinque glabrescentia, subtus primo fortasse indumento detersili ferrugineo plus minusve conspersa; pars integra circ. 9 cm. alta (quasi petiolulos conjungens); lobi circ. 11, oblongi, in spec. nostris ad 18 cm. longi, ad 6 cm. lati, apice caudato-acuminati, basi excisi sinum latiusculum formantes, margine serraturis multo incurvis praediti; nervi subtus

prominuli. Inflorescentia corymboso-paniculata, circ. 20 cm. longa, circ. 30 cm. lata, a basi ramosa, parce puberula ; pedunculi ad 12 cm. longi, pedicelli 1.5 cm. longi, fructu ad 2 cm. aucti, glabri vel glabrescentes ; umbellae floriferae fere 4 cm. diametro multiflorae. Calycis dentes vix evoluti ; petala 5, circ. 4 mm. longa triangularia vel ovato-triangularia, acutiuscula, extra sparsim puberula, viridi-flava ; ovarium obconicum fere glabrum biloculare, cum disco hemisphaerico 4 mm. longum, stylo simplici 2 mm. longo.

" China :—Shweli Valley, Yunnan. Lat. 25° N. Alt. 6000 ft. Shrub of 20–30 ft. Flowers greenish-yellow. Open situations. July 1912." G. Forrest. No. 8670.

Buddleia Cooperi, W. W. Sm. Sp. nov.

Species affinis *B. limitaneae*, W. W. Sm. et *B. Forrestii*, Diels et *B. taliensi*, W. W. Sm., sed calycis segmentis, stylo brevissimo inter alia ab omnibus facile separatur.

Frutex ad 1 m. altus caulibus plus minusve quadrangulatis anguste alatis infra glabrescentibus supra sparsim stellato-puberulis, ramulis paucis gracilibus. Folia sessilia vel petiolo brevissimo circ. 2 mm. longo suffulta ; lamina vulgo 10–15 cm. longa, 4–7.5 cm. lata, late lanceolata vel oblanceolata, apice longiuscule acuminata, basi late cuneata, margine plus minusve serrata serraturis calloso-apiculatis, in sicco tenuiter membranacea, supra viridis sparsim scabridule puberula, subtus subolivacea tomento exiguo vel fere deficiente praedita. Inflorescentiae laxae e cymis breviter pedunculatis 1–3-floris compositae ; cymae partim ex axillis foliorum superiorum remotis quasi verticillastri orientes, partim paniculam terminalem brevem angustam efficientes. Bracteae subulato-lineares. Flores pedicellis plus minusve 5 mm. longis sparsim puberulis suffulti ex collectore albi purpureo-tincti. Calycis plus minusve 5 mm. longi extrinsecus minute puberuli vel stellato-furfuracei tubus ad medium in dentes triangulares breviter calloso-apiculatos sinu mediocri lobulis minimis saepe praedito inter se separatos divisus. Corolla 1–1.2 cm. longa ; tubus circ. 4 mm. latus, extra glaber vel parce pilosulus intra pilosus, lobi circ. 2.5 mm. diametro extra glabrescentes intra dense pilosi. Stamina ad medium tubum affixa. Ovarium glabrum circ. 2.5 mm. longum, stylo brevissimo circ. 0.5 mm. longo, stigmate conspicuo quam stylus longiore. Fructus deest.

" Bhutan :—Between Rudong La and Pumthang, at an elevation of 11,000 ft. A bush of 2–3 ft., on gravel and debris. Flowers white, tinged purple. 23rd July 1915." Cooper. No. 4154.

This Himalayan plant finds its nearest affinities in certain

species of the Burmo-Chinese border; it is closely akin to *B. limitanea*, W. W. Sm., from Northern Burma, and has a similar habit and the same thin membranous leaves. The calyx is however differently cut, and lobules appear often in the narrow sinuses; the most marked distinction, however, is in the style, which is unusually short.

Buddleia Fallowiana,* Balf. f. et W. W. Sm. Sp. nov.

Species affinis *B. macrostachyae*, Benth. et *B. niveae*, Duthie quibuscum in herbariis hortisque confusa est; corolla gracillima, staminibus paulo supra medium tubum nec ad fauces insertis inter alia recedit.

Frutex 1–4 m. altus ramis teretibus vel obscure angulatis tomento stellato denso mollissimo niveo vel fulvido-albo indutis. Folia opposita petiolo 5–10 mm. longo dense tomentoso praedita, superiora 6–14 cm. longa, 2–4 cm. lata, lanceolata, basi plus minusve cuneata, apice acuta vel breviter acuminata, chartacea, margine regulariter crenato-denticulata denticulis minute apiculatis, supra primo sparsim araneoso-tomentosa tandem subglabrescentia obscure viridia nervis 8–10 paribus impressis, infra tomento denso niveo vel fulvido induta nervis paulo elevatis. Inflorescentiae spiciformes in apice ramulorum solitariae vel ternae, 8–14 cm. longae, circ. 2.5 cm. latae densiflorae continuae dense tomentosae e cymulis congestis brevissime pedunculatis compositae; bracteae infimae foliis caulinis subsimiles sed minores et angustiores, medianae et supremae lineares cymulas plus minusve aequantes. Calyx tubulosus circ. 3 mm. longus tubo corollae adpressus, extus dense niveo- vel fulvido-tomentosus, intus glaber dentibus circ. 1.5 mm. longis anguste triangularibus acutis. Corollae lavendulaceae tubus circ. 8 mm. longus, circ. 1 mm. latus extus tomentosus intus dimidio superiore villosus; lobi rotundati circ. 2 mm. diametro margine plus minusve erosuli extus tomentelli. Stamina paulo supra medium tubum inserta, antheris a faucibus subremotis. Ovarium circ. 1.5 mm. longum basi glabrum supra albo-tomentellum; stylus circ. 1.5 mm. longus. Fructus circ. 4 mm. longus; semina non visa.

Buddleia macrostachya, Benth. var. *yunnanensis*, Dop ex Diels in Notes, R.B.G., Edin., vii (1912), 145, quoad specimina Forrestiana sub n. 2599.

"China:—Branched shrub of 6–12 ft. Flowers rich lavender, throat of corolla orange, fragrant, with an odour resembling vanilla. Dry stony situations along base of the

* The specific name is given to keep in memory Sergeant George Fallow, 5th Batt. The Royal Scots, a former gardener on the staff of the Royal Botanic Gardens, Edinburgh, who died 19th August 1915, in Egypt, of wounds received in action at Gallipoli.

eastern flank of the Lichiang Range, Yunnan. Lat. 27° 12′ N. Alt. 9000 ft. July 1906." G. Forrest. No. 2599.

"Shrub of 4–10 ft. Flowers soft lavender, throat orange, fragrant. By streams at the north end of the Lichiang plain. Lat. 27° 20′ N. Alt. 9000 ft. July 1910." G. Forrest. No. 6047.

"Shrub of 3–5 ft. Flowers lavender, throat orange, strongly fragrant. Stony situations by streams on the eastern flank of the Lichiang Range. Lat. 27° 30′ N. Alt. 9000–10,000 ft. Aug. 1910." G. Forrest. No. 6285.

"Lichiang Range, 8500–10,000 ft. July 1913." G. Forrest. No. 10,591.

Also specimens cultivated by Bees, Ltd., and in the Royal Botanic Garden, Edinburgh, where it flowered Sept.–Oct. 1912, and was then named *B. macrostachya*, Benth. var. *yunnanensis*, Dop.

The nearest allies of this species are *B. macrostachya*, Benth., *B. nivea*, Duthie, and *B. nivea* var. *yunnanensis*, Rehder and Wilson (which is the same as *B. macrostachya* var. *yunnanensis*, Dop). All occur in S.W. China. The flowers of *B. Fallowiana* are much more slender, much longer in proportion to their width, the stamens are inserted a little above the middle of the tube, not near the sinuses of the corolla lobes as in the other species; the leaves are finely denticulate and show until a late stage a thin coating of whitish tomentum *above*.

78 **Buxus microphylla,** Sieb. et Zucc., var. **prostrata,** W. W. Sm. Var. nov.

Planta nana prostrata calcicola. Ramuli petiolique minute puberuli.

"China :—Lichiang Range, Yunnan. Lat. 27° 40′ N. Alt. 12,000 ft. Prostrate evergreen shrub of 12–18 inches. Flowers yellow. On cliffs and humus-covered boulders. June 1913." G. Forrest. No. 10,184.

"Eastern flank of the Lichiang Range. Prostrate shrub of 2–4 ft. On the face of limestone cliffs. Aug. 1910." G. Forrest. No. 6300.

79 **Buxus mollicula,** W. W. Sm. Sp. nov.

Species inter affines foliis maturis utrinque molliter pubescentibus bene notata.

Frutex ad 3 m. altus. Ramuli angulati dense atque molliter pubescentes, seniores tarde glabrescentes cinerascentes. Folia petiolo circ. 1 mm. longo pilosulo suffulta; lamina 3–4 cm. longa, 1·5–2·5 cm. lata, plus minusve elliptica, apice rotundata vel

obtusa brevissime emarginata vel calloso-apiculata, basi vulgo late cuneata, coriacea, supra subnitida ubique molliter puberula, nervis subconspicuis, subtus paulo pallidior, molliter puberula, usque ad marginem paululum in sicco revoluta, nervis obscuris. Flores non visi. Capsula circ. 9 mm. longa olivacea seminibus circ. 5 mm. longis, circ. 2 mm. latis, subtrigonis nigris nitentibus.

"China :—Mountains in the N.E. of the Yangtze bend, Yunnan. Lat. 27° 45′ N. Alt. 10,000 ft. Shrub of 8–10 ft. In fruit. Open situations in ravines. July 1913." G. Forrest. No. 10,684.

Campanula xylopoda, J. F. Jeff. Sp. nov.

Species affinis *C. canae,* Wall. sed inter congeneres caudice lignoso crassissimo, caulibus numerosis lignosis conspicua.

Planta perennis ad 30 cm. alta undique tomento canescente praesertim in caule atque paginis foliorum inferioribus induta. Caudex ± 1 cm. diametro ; caules 15–20 basi orientes lignosi graciles ascendentes sat foliosi. Folia 1–2 cm. longa 3–6 mm. lata, lanceolata subacuta vel obtusa margine paululo sinuata, basi acuta, membranacea, supra atroviridia tomentosa infra tomento densiore canescente praesertim ad costam venasque induta ; nervi obscuri ; petioli 1–2 mm. longi. Paniculae pauciflorae laxae ; bracteae foliis subsimiles sed minores ; pedicelli graciles 1.5–2 cm. longi. Receptaculum circ. 3 mm. longum ; calycis dentes circ. 4 mm. longi anguste lanceolati acuti canescentes. Corolla coerulea 1 cm. longa cylindrica circ. ad medium in lobos lanceolatos subacutos divisa, ore 4–5 mm. lata, extus pubescens. Stamina stylo breviora antheris circ. 4 mm. longis filamentis 1 mm. longis. Stylus 7 mm. longus.

"China :—North-East Yunnan, dry calcareous banks of the Blue River (Yangtze-kiang) at 1200 ft. Coll. E. E. Maire. No. 798 (anno 1913) in Herb. Edin.

Carduus euosmus, G. Forrest. Sp. nov.

Species inter affines hujus regionis habitu acauli, capitulis permagnis, floribus aurantiacis fragrantibus bene notata.

Herba perennis acaulis radice crassissima pluricipite reliquiis fibrosis petiolorum praeteritorum ad collum dense induta. Folia petiolo ad 5 cm. longo complanato plurisulcato dense albo-araneoso-tomentoso praedita ; lamina 25–30 cm. longa, 5–8 cm. lata, ambitu anguste lanceolata, irregulariter pinnatifida, supra glabra sublucida infra tomento albo denso araneoso induta, lobis latis basi confluentibus irregulariter lobulatis, nervis subtus conspicuis stramineis in spinas longas excurrentibus. Capitula plerumque 4–12, subglobosa, 5–7 cm. diametro subsessilia vel

pedunculo crasso circ. 1.5 cm. longo albo-tomentoso suffulta ; involucri phylla imbricata erecta lineari-lanceolata extus albo-tomentosa in spinam longam validam rectam in sicco stramineam producta ; flores aurantiaci circ. 4 cm. longi fragrantes ; pappi setae circ. 3 cm. longae minute barbellatae nec plumosae, roseo-albae ; achaenia 8–9 mm. longa, obovata, complanata, medio 3 mm. lata.

" China :—Atuntsu Valley, Yunnan. Lat. 28° 26′ N. Alt. 12,000 ft. Plant of 3–4 inches. Flowers golden yellow, fragrant. Open dry stony pasture. Sept. 1914." G. Forrest. No. 13,347.

2343 **Caryopteris siccanea,** W. W. Sm. Sp. nov.

Species valde affinis *C. divaricatae,* Maxim. a qua foliis cordatis utrinque longiuscule setosulis, caulibus et inflorescentiae ramulis et pedunculis et pedicellis densissime glandulosis et hirsutis, floribus albis, calyce irregulari differt.

Planta 60–75 cm. alta ; caules angulati patenter hirsuti et glandulosi. Folia in sicco tenuiter membranacea, petiolo ad 7.5 cm. longo hirsuto glanduloso suffulta ; lamina ad 8 cm. longa, ad 7 cm. lata, late ovata, apice acutata mucronata, basi cordata, margine utrinque serraturis circ. 12 grossis ovatis mucronatis incisa, utrinque setis adpressis albidis plus minusve dense conspersa. Inflorescentia quoad formam magnitudinemque ei *C. divaricatae* subsimilis sed angustior ; axis et ramuli cum pedunculis pedicellisque hirsuti et pilis glanduloso-capitatis fulvidis densissime obsiti ; bracteae lanceolatae vel lineari-lanceolatae, infra circ. 1 cm. longae, supra sensim decrescentes. Calyx 4–5 mm. longus circ. ad medium bilabiatus, lobo superiore trifido, inferiore bifido, extra praesertim ad basim glandulosus et hirsutulus. Corolla ei *C. divaricatae* subsimilis extra pilosula alba. Stamina glabra ad 1.5 cm. e tubo exserta. Stylus stamina subaequans in stylos duos longiusculos subulatos exiens. Fructus immaturus carnosulus, maturus deest.

" China :—On the Yung-pe Mountains, Yunnan. Lat. 26° 45′ N. Alt. 9000 ft. Plant of 2½ ft. Flowers white. Open dry rocky pasture. June 1914." G. Forrest. No. 12,746.

2334 **Caryopteris trichosphaera,** W. W. Sm. Sp. nov.

Species affinis *C. incanae,* Miq. et *C. tanguticae,* Maxim. a quibus corollae lobis longissime violaceo-villosis praeter alia signa divergit.

Fruticulus 45–60 cm. altus, ramosus ; ramuli dense albido-crispato-tomentosi. Folia petiolo 2–5 mm. longo albido-tomentoso praedita ; lamina ad 3 cm. longa, ad 2.5 cm. lata, ovata

vel oblongo-ovata, apice rotundata vel obtusiuscula, basi truncata vel truncato-rotundata, margine crenis 6–9 notata, papyracea, supra dense et breviter fulvido-pilosula, infra densissime incano-tomentosa ; nervi 4–5 paria. Cymae subglobosae densiflorae in axillis superioribus, dense albido-villosae pedunculis pedicellisque brevibus. Calyx circ. 4 mm. longus tubulosus ad duas partes in lobos lineari-oblongas acutas divisus longe albido-villosus. Corolla circ. 6 mm. longa ; tubus cylindricus fere 5 mm. longus extus hic illic villosus ; lobi oblongi apice dense et longissime violaceo-villosi, quintus major fimbriatus. Stamina ad 4 mm. exserta. Fructus deest.

" China :—Near Atuntsu, Yunnan-Tibet frontier. Alt. 12,000–13,000 ft. Bushy undershrub 1½–2 ft. high. Flowers blue-violet. Aug. 1913." F. K. Ward. No. 1048.

4260 **Cassiope myosuroides,** W. W. Sm. Sp. nov.

Species ex affinitate *C. palpebratae,* W. W. Sm. ; foliis longiuscule scarioso-acuminatis infra mire bullatis ab omnibus speciebus asiaticis divergit.

Fruticulus humilis 7 cm. vix superans suberectus vel decumbens. Folia arcte imbricata tetrasticha 2–2.5 mm. longa, vix 1 mm. lata, ovata apice 1 mm. longo acuminato scarioso praedita, lateribus anguste scariosa, dorso convexa bullam ellipticam utrinque viridem extus setis adpressis ciliolatis modice obsitam intus glabram formantia. Flores axillares cernui (albidi ?) pedicellis gracilibus circ. 2 cm. longis subabrupte abeuntibus dense araneoso-fulvido-villosis suffulti. Sepala 4–5 libera circ. 3 mm. longa plus minusve late elliptica in sicco atropurpurea, utrinque glabra, apice obtusa anguste scariosa. Corolla campanulata circ. 8 mm. longa lobis 5 ovatis ± 2.5 mm. longis obtusis. Stamina 8 (in specimine dissecto) inclusa filamentis 2 mm. longis subulatis sparse pilosulis, antheris ovoideis apice aristis duabus elongatis ornatis. Discus 10-crenatus. Stylus 2.5 mm. longus columnaris apice truncatus. Fructus maturus deest.

" Upper Burma :—Burmo-Chinese frontier. Ridge of Naung-Chaung, Nwai divide. On bare granite rocks, north face, at 12,000 ft., and on summit with rhododendron carpet at 13,000 ft. Flowers over. 15th July 1914." F. Kingdon Ward. No. 1788.

Very readily distinguished by its leaves, scariose acuminate at the apex and with the rest of the lamina forming a green elliptic boss furnished with ciliolate setae.

440 **Cornus alsophila,** W. W. Sm. Sp. nov.

Species affinis *C. Wilsonianae,* Wangerin a qua foliis subtus glaucis, nervis primariis 5–6 paribus, ovario glabriore minore,

stylo breviore divergit ; a *C. Walteri*, Wangerin ramulis rubescentibus, foliis minoribus chartaceis subtus glaucis minute sparsimque pilosulis, ovario minore minute sparsimque pilosulo, stylo cylindrico recedit.

Frutex 2–3 m. altus ramulis cito glabris rubescentibus. Folia petiolo 1.5–2 cm. longo glabro vel sparsim pilosulo praedita ; lamina plus minusve elliptica, 6–8 cm. longa, 3–4.5 cm. lata, apice breviter acuminata, basi cuneata rarius subrotundata, chartacea, supra haud lucida pilis albidis minutis conspersa, subtus glauca minutissime sparsimque pilosula, nervis 5–6 paribus infra conspicuis paulo eminentibus. Inflorescentia pedunculo 2–3 cm. longo suffulta paniculata ramulis saltem post anthesin glabris vel fere glabris. Ovarium fere globosum vix 2 mm. longum minute sparsimque pilosulum. Sepala lineari-lanceolata discum conspicuum subaequantia circ. 1 mm. longa. Petala staminaque non visa. Stylus circ. 3 mm. longus cylindricus parce pilosulus. Drupa nigro-purpurea globosa circ. 5 mm. diametro sparsim pilosula.

" China :—On the Tong-Shan in the Yangtze bend, Yunnan. Lat. 27° 20′ N. Alt. 9000–10,000 ft. Open situations amongst scrub. Shrub of 6–9 ft. Fruits black-purple. Sept. 1913." G. Forrest. No. 11,176.

1946 **Corydalis saltatoria,** W. W. Sm. Sp. nov.

Species aliquatenus anomala ; inflorescentia racemosa rhachi tortuosa pedicellis gracillimis prehensilibus floribus subremotis bracteis reflexis conspicua.

Planta gracillima erecta 40–60 cm. alta. Radices fibrosae. Caulis simplex vel parce ramosus flexuosus remote foliatus. Folia basalaria et caulina similia, petiolo 6–12 cm. longo gracillimo suffulta ; lamina biternata petiolulis primariis vulgo 1–3 cm. longis, petiolulis secundariis 5–10 mm. longis ; foliola ovata vel ovato-lanceolata integra subtus glaucescentia 1–1.7 cm. longa, ad 1.2 cm. lata, apice rotundata vel obtusa, basi rotundata vel late cuneata, tenuiter membranacea. Racemi in axillis superioribus remotiflori 3–5 cm. longi ; bracteae lineares ± 2 mm. longae plerumque reflexae ; rhachis abrupte flexuosa ; pedicelli 1–2 cm. longi gracillimi flexuosi quasi-prehensiles ; flores fere 2 cm. longi pallido-lutei. Sepala ovata acuminata ± 1 mm. longa basi lobatula apice integra pallido-viridia. Petalum inferum circ. 9 mm. longum ecarinatum apice apiculo ± 1 mm. longo praeditum ; petalum superum inferiore paulo brevius ecristatum breviter apiculatum ; calcar cylindricum circ. 1 cm. longum gracile fere rectum obtusiusculum. Ovarium lineare circ. 3 mm. longum stylo 3 mm. longo. Fructus deest.

" Upper Burma :—On the Burmo-Chinese frontier at the

Naung-Chaung, Nwai divide. In marshy leaf mould by streams in elfin forest shade. Alt. 10,000 ft. June 1914." F. Kingdon Ward. No. 1708.

A peculiar species; the racemes have a very zigzag rhachis with linear reflexed bracts, and very slender pedicels, which appear to be more or less prehensile. The upper and lower petals have an apiculus; the bud at a certain stage consequently appears as if two-horned. The specific name is intended to indicate the delicately poised flowers which must be set in motion by the lightest current of air.

Cotoneaster glaucophylla, Franch., var. **meiophylla,** W. W. Sm. Var. nov.

Foliis minoribus 2–2.5 cm. longis, 1–2 cm. latis, ellipticis magis quam ovatis apice basique plus minusve rotundatis a typo divergit.

"China:—Mingkwong Valley, Yunnan. Lat. 25° 15′ N. Alt. 6000–7000 ft. Shrub of 4–6 ft. Flowers creamy-white. Open situations among scrub. June 1912." G. Forrest. No. 8325.

This variety does not diverge very far from some of the specimens collected by Henry near Mengtsz. It appears to fruit earlier. Forrest's specimens are in young fruit, already inclining to red, and that in June.

Var. **vestita,** W. W. Sm. Var. nov.

Foliis primum subtus dense fulvido-tomentosis, inflorescentiis magis tomentosis, calyce primum dense albo-lanato-tomentoso nec glabro a typo divergit.

"Hills east of Tengyueh, Yunnan. Lat. 25° N. Alt. 6000 ft. Shrub of 5–8 ft. Flowers creamy-white. Amongst scrub. May 1912." G. Forrest. No. 7723.

Cotoneaster glomerulata, W. W. Sm. Sp. nov.

Species affinis *C. obscurae,* Rehder et Wilson a qua foliis, petiolis, inflorescentiis plurifloris, fructibus pyrenisque minoribus differt.

Frutex 1–3 m. altus ramis late patentibus; ramuli hornotini pilis fulvidis longiusculis adpressis dense tomentosi, annotini tarde glabrescentes fusci; gemmae fulvido-tomentosae. Folia petiolo 2–3 mm. longo dense tomentoso suffulta decidua; lamina vulgo 4–5 cm. longa, 2–2.5 cm. lata, ovato-lanceolata, apice plus minusve acuta, rarius acuminata vel obtusiuscula, breviter mucronata, basi rotundata vel late cuneata, in sicco papyracea, supra atroviridis ad tempus fructus maturi sparsim pilosa vel

subglabra, subtus tomento fulvido laxiusculo ex toto induta ; nervi 4–5 paria, supra impressuli, cum costa impressa faciem subrugosam efficientes, infra paulo eminentes. Flores desunt. Fructus 3–11 in racemis congestis ramulos breves terminantibus ; pedunculus brevis cum pedicellis 2–4 mm. longis dense adpresse fulvo-pilosus ; fructus ipsi pyriformes circ. 5 mm. longi, apice fere 5 mm. lati, kermesini, plus minusve pilosi, sepalis inflexis tomentellis coronati ; pyrenae vulgo 5, triangulari-ovoideae, 4 mm. longae, 2 mm. latae, nitentes, pallide brunneae.

" China :—Shweli Valley, Yunnan. Lat. 25° 30′ N. Alt. 8000 ft. Shrub of 6–9 ft. Fruits dull crimson. Amongst scrub in open situations. Sept. 1913." G. Forrest. No. 12,046.

The following examples also in fruit and from the same area are probably conspecific ; they have, however, fewer fruits in the inflorescence and fewer pyrenes, usually 3–4 :—

" Mingkwong Valley, Yunnan. Lat. 25° 15′ N. Alt. 6000–7000 ft. Shrub of 3–5 ft. In fruit. Amongst scrub. June 1912." G. Forrest. No. 8350.

" Mingkwong Valley. Lat. 25° 20′ N. Alt. 7000 ft. Shrub of 4–8 ft. Fruits scarlet. Open situations amongst rocks. July 1912." G. Forrest. No. 8584.

Cotoneaster hebephylla, Diels, var. **fulvida,** W. W. Sm. Var. nov.

Foliis subtus tomento fulvido densiuscule indutis, ramulis floriferis pedicellisque calycibusque plus minusve dense fulvido-adpresso-pilosis recedit.

" China :—Yungchang-Mekong divide, Yunnan. Lat. 25° 15′ N. Alt. 7000 ft. Shrub of 6–8 ft. Flowers creamy-white. Open situations amongst scrub. May 1913." G. Forrest. No. 9888.

Var. **incana,** W. W. Sm. Var. nov.

Foliis supra sublucidis infra tomento denso ad fructus maturi tempus persistente incano vix fulvido notata ; flores non visi ; fructus pyriformis 7–9 mm. longus, apice circ. 6 mm. latus, ruber ; pyrenae 2, plano-convexae, 5 mm. longae, 3 mm. latae.

" China :—On the Tong-Shan, in the Yangtze bend, Yunnan. Lat. 27° 20′ N. Alt. 10,000 ft. Shrub of 6–9 ft. In fruit. Fruits red. Open scrub. Aug. 1913." G. Forrest. No. 10,837.

Var. **majuscula,** W. W. Sm. Var. nov.

Foliis ellipticis majoribus plerumque circ. 3 cm. longis apice basique subrotundatis vel obtusis, inflorescentiis effusioribus, floribus majoribus a typo discrepat.

"China :—N.W. Yunnan, near Tibetan frontier, at 9000–10,000 ft." F. Kingdon Ward. No. 492.

The following probably represents the fruit :—

"Mountains in the N.E. of the Yangtze bend, Yunnan. Lat. 27° 45′ N. Alt. 11,000 ft. Shrub of 6–8 ft. Fruits crimson. Open scrub. Oct. 1913." G. Forrest. No. 11,463.

The fruits are broadly pyriform, 8–9 mm. long, about 7 mm. broad ; the pyrenes 2, about 5 mm. by 4 mm.

6462 Var. **monopyrena,** W. W. Sm. Var. nov.

Fructibus majusculis ovoideis fere 1 cm. longis, 8 mm. latis, atrokermesinis, pyrenis duabus in unam coalitis, loculo altero seminifero, altero complanato vacuo bene notata.

"China :—Lichiang Range, Yunnan. Lat. 27° 30′ N. Alt. 10,000 ft. Shrub of 9–12 ft. In fruit. Fruits black-crimson. Open situations by streams. Sept. 1913." G. Forrest. No. 11,422.

C. hebephylla, Diels appears to be a very variable plant. It is quite possible that more than one species is included in this aggregate, and I have not been able to correlate to my satisfaction the fruiting specimens with the flowering. At the same time a detailed examination of the structure of the leaf and indumentum, as well as of the flowers, shows the examples to be very closely connected. Until further material is available I have judged it better to keep them under one specific name. Authentic fruiting specimens of the type are much wanted. The series shows a very definite approach to *C. racemiflora,* K. Koch, var. *soongorica,* Schneider, common in Western Szechwan, but the material at my disposal is not sufficient for me to determine whether *C. hebephylla* should be ranged along with or under that species.

3789 **Cotoneaster lactea,** W. W. Sm. Sp. nov.

Species affinis *C. Henryanae,* Rehder et Wilson, *C. rhytidophyllae,* Rehder et Wilson, *C. salicifoliae,* Franch., ab omnibus quibus foliis apice basique rotundatis vel obtusissimis differt.

Frutex 2–3 m. altus ; ramuli hornotini tomento albido mox fulvido denso villoso induti, annotini glabri vel subglabri rubescentes, seniores cinereo-brunnei. Folia petiolo circ. 5 mm. longo dense fulvido-tomentoso suffulta ; lamina 3.5–5 cm. longa, ad 3.3 cm. lata, late elliptica, apice plerumque rotundata, nunc obtusissima, breviter mucronata, basi rotundata vel late cuneata, crasse papyracea vel etiam coriacea, supra primo laxe et sparsim villosa mox glabrescens opaco-viridis vix lucida, infra tomento denso persistente villoso primo albido mox fulvido induta ;

costa media et nervi 7–8 paria supra multum impressi subparalleli infra eminentes indumento suboperti; stipulae dimidium petiolum aequantes sublineares tomentosae. Corymbi ad 4 cm. longi, ad 6 cm. lati, laxiusculi convexi, ramis ramulisque pedicellisque dense et adpresse fulvido-tomentosis; pedicelli sub anthesin circ. 2 mm. longi; calyx ex toto dense et adpresse albido-tomentosus; tubus circ. 3 mm. longus turbinatus, lobi triangulares circ. 1 mm. longi acutiusculi mucronulati; petala suborbicularia circ. 2.5 mm. diametro, vix unguiculata, margine minute erosula, patentia, lactea; stamina 20 corolla paullo breviora; carpidia 2; stigmata capitata. Fructus pyriformis, 4 mm. longus, apice 3 mm. latus, kermesinus, laxe villosus, calycis lobis tomentosis inflexis coronatus; pyrenae 2, plano-convexae, circ. 3.5 mm. longae, 2.5 mm. latae.

"China:—Descent to the Yangtze from the eastern boundary of the Lichiang Valley, Yunnan. Lat. 27° 15′ N. Alt. 9000 ft. Shrub of 6–10 ft. Flowers creamy-white. In open thickets. July 1913." G. Forrest. No. 10,419.

"Duplicate of above in fruit. Fruits dull crimson. Sept. 1913." G. Forrest. No. 11,338.

"On the Tong Shan, Yunnan. Lat. 27° 20′ N. Alt. 9000–10,000 ft. Shrub of 6–9 ft. Flowers creamy-white. Open scrub in rocky situations. July 1914." G. Forrest. No. 12,720.

A very beautiful species closely allied to *C. Henryana* and *C. salicifolia*, from which its rounded leaves well distinguish it. *C. coriacea*, Franch. is distinguished by the obovate leaves, longly cuneate at the base, and with glabrous shining upper surface.

5487 **Cotoneaster pannosa,** Franch., var. **robustior,** W. W. Sm. Var. nov.

A typo foliis majoribus ad 3 cm. longis anguste ellipticis paululum discedit.

"China:—Mekong-Yangtze divide, Yunnan. Lat. 7° 40′ N. Alt. 10,000 ft. Shrub of 8 ft. Flowers creamy-white. Open situations amongst rocks. July 1914." G. Forrest. No. 12,869.

More robust than the type and with larger leaves; the plant occupies an intermediate position between *C. pannosa*, Franch. and *C. turbinata*, Craib, or rather deviates from typical *C. pannosa* in the direction of *C. turbinata*.

6580 **Cotoneaster rubens,** W. W. Sm. Sp. nov.

Species ex affinitate *C. verruculosae*, Diels a qua foliis subtus tomentosis, floribus rubris recedit.

Fruticulus plus minusve prostratus ramis crassis saepe complanatis, ramulis hornotinis brevissimis pilis sordide albidis obtectis, vetustioribus cinereis ob bases petiolorum persistentes verrucosis. Folia ad 1.5 cm. longa, ad 1 cm. lata, orbicularia vel late elliptica, apice basique rotundata, obscure mucronulata, papyracea, supra cito glabrescentia nervulis 2–3 paribus impressis, infra dense fulvo-tomentosa ; petioli tomentosi circ. 1 mm. longi. Flores terminales subsessiles solitarii basi foliis bracteisque circumcincti. Calycis tubus 3–4 mm. longus ovoideo-turbinatus adpresse villosus ; lobi circ. 3 mm. longi late ovati apice obtusi extus medio tomentosi margine ciliati rubridi. Petala erectiuscula orbicularia circ. 4 mm. diametro rubra. Stamina 10 calycis lobos subaequantia. Carpidia 2 apice dense villosula. Fructus non visus.

" China :—Mountains of the Chungtien plateau, Yunnan. Lat. 27° 30′ N. Alt. 10,000 ft. Shrub of 2½–4 ft. Flowers red. Open situations amongst rocks. July 1914." G. Forrest. No. 12,663.

6452 **Cotoneaster Wardii,** W. W. Sm. Sp. nov.

Species ex affinitate *C. Francheti,* Bois a qua habitu diverso, ramulis floriferis multo longioribus, foliis majoribus tomento argenteo praeditis inter alia signa differt.

Frutex 1.5–2.4 m. altus ; ramuli hornotini tomento argenteo dense induti, annotini tarde glabrescentes. Folia petiolo circ. 4 mm. longo dense tomentoso praedita ; stipulae lineares tomentellae petiolos fere aequantes ; lamina 2.5–3.5 cm. longa, 1.5–2 cm. lata, ovata, apice acuta vel acutiuscula, saepe longiuscule mucronata, basi rotundata vel late cuneata, papyracea, supra viridis vix lucida, ad costam impressam parce pilosa ceterum glabra, infra tomento denso argenteo induta ; nervi 5–6 paria supra paulo impressi subtus prominuli tomento operti. Corymbi circ. 2 cm. longi, 2.5 cm. lati, 10–15-flori, ramos circ. 4 cm. longos terminantes ; rami cum pedicellis dense tomentosi ; bracteae bracteolaeque lineares longiusculae ; pedicelli 4–5 mm. longi. Calyx ex toto densiuscule et adpresse albido-pilosus vel tomentosus ; tubus circ. 3 mm. longus turbinatus ; lobi triangulares 2.5 mm. longi acuti vel acuminati ; petala erecta suborbicularia fere 4 mm. diametro, breviter unguiculata, integra, alba ; stamina 20 fere 3 mm. longa ; carpidia 2 apice dense albido-pilosula. Fructus desideratur.

" South-East Tibet :—Ka-gwr-pw temple, near the Chinese frontier, in forest at 10,000–11,000 ft. Shrub of 5–8 ft., silver-leaved. July 1913." Kingdon Ward. No. 916.

A plant akin to *C. Francheti,* Bois, but very different in habit and form of inflorescence.

Crataegus chungtienensis, W. W. Sm. Sp. nov.

Species ex affinitate *C. sanguineae,* Pallas a qua foliis minoribus basi saepius truncato-rotundatis, stipulis glanduloso-serratulis inter alia recedit.

Frutex 3.6–6 m. altus; ramuli hornotini tenues glabri vel subglabri nitenti-rubescentes, annotini plus minusve cinerei; spinae rectae robustae circ. 1.5 cm. longae; gemmae rotundae perulis nitenti-brunneis glabris. Folia petiolo circ. 1 cm. longo glabro suffulta; lamina 3–5.5 cm. longa, 2–5 cm. lata, late ovata, apice ambitu plus minusve obtusa, basi truncato-rotundata vel late cuneata in petiolum alatum decurrens, serraturis rectis glanduloso-mucronatis serrata, supra medium 7–9-lobatula lobulis ovatis obtusis, membranacea ad maturitatem supra vix nitida, glabra, infra glabra vel ad axillas nervorum sparsim albo-pilosa; nervi in loborum apicem nec in sinus excurrentes, infra prominuli; stipulae ovatae vel lanceolatae, deciduae, glanduloso-serratulae. Corymbi 3–4 cm. lati, multiflori glabri, bracteis sublinearibus vel spathulatis 2–3 mm. longis glanduloso-serratulis post anthesin subpersistentibus, pedicellis circ. 5 mm. longis glabris. Calycis tubus campanulatus glaber circ. 4 mm. longus lobis ovato-triangularibus vix 1 mm. superantibus tandem reflexis; petala alba circ. 5 mm. diametro; stamina 20; styli 1–2–3, basi glabri. Fructus globoso-oblongus, circ. 8 mm. longus, circ. 6 mm. latus, nitenti-ruber; pyrenae 1–3, circ. 6 mm. longae, 4 mm. latae, dorso obscure costatae, ventre hic illic excavatae.

"China:—Chungtien plateau, Yunnan. Lat. 27° 30′ N. Alt. 10,000 ft. Shrub of 12–20 ft. Flowers creamy-white. Open thickets and on the margins of forests. July 1914." G. Forrest. No. 12,644.

"Chungtien plateau. Lat. 27° 55′ N. Sept. 1913." G. Forrest. No. 11,318.

Crataegus oresbia, W. W. Sm. Sp. nov.

Species affinis *C. chungtienensi,* W. W. Sm. a qua primo intuitu inflorescentia dense albo-pilosa inter alia discrepat.

Frutex 6 m. altus; ramuli hornotini dense albido-patenti-pilosi, annotini glabri tandem cinerei; spinae in spec. nostr. deficientes; gemmae rotundae glabrae. Folia cum eis speciei praecedentis quoad magnitudinem formamque nervosque bene congruunt sed apice minus obtusa, petiolo densiuscule albo-piloso praedita, supra ad maturitatem sparsim albo-pilosa, subtus ad costam nervosque prominulos nervulosque pilis albidis subadpressis sparsim induta. Corymbi fructiferi ad 7 cm. lati, multiflori ramis ramulisque densissime albido-patenti-pilosis,

bracteis sublinearibus glanduloso-serratulis subpersistentibus, pedicellis circ. 7 mm. longis pilosis. Calycis tubus campanulatus patenti-pilosus lobis triangularibus acutis in fructu circ. 2 mm. longis reflexis ; petala (ex reliquiis) circ. 5 mm. diametro alba ; stamina 20 ; styli plerumque 2–3 basi glabri. Fructus vix maturus, circ. 6 mm. longus, 5 mm. latus, sparsim albo-pilosus ; pyrenae 2–3, ventre excavatae.

" China :—Mountains of the Chungtien plateau, Yunnan. Lat. 27° 55′ N. Alt. 10,000 ft. Shrub of 20 ft. In fruit. In open thickets. July 1913." G. Forrest. No. 10,613.

4490 **Cremanthodium gracillimum,** W. W. Sm. Sp. nov.

Species affinis *Cremanthodio Decaisnei,* C. B. Clarke sed habitu gracillimo floribusque kermesinis in hoc genere facile recognoscitur.

Caulis simplex 15–20 cm. altus plus minusve sparsim fulvido-araneoso-villosus. Folia basalia 2–4 petiolo gracillimo 10–14 cm. longo praedita ; lamina reniformis vel orbicularis, circ. 2.5 cm. diametro, basi cordata vel excisa, margine dentata vel crenato-dentata, dentibus 25–40 mucronulatis vel subobtusis, in sicco papyracea, utrinque primo sparsim araneoso-pubescens, deinde glabrescens ; folia caulina plerumque solitaria, medio vel sub medio inserta, petiolo multo breviore praedita ; sub involucro folia bracteiformia 3–5 subulata minima supposita. Capitulum seminutans : involucri phylla 12–15, circ. 1 cm. longa, circ. 3 mm. lata, lanceolata vel oblanceolata, acuta, marginibus late scariosa, extus medio araneoso-pubescentia, intus glabra. Florum ligulatorum ligulae circ. 12, fere 2.5 cm. longae, apice trilobatae lobulis apiculatis, ex collectore obscure kermesinae ; pappus circ. 7 mm. longus sordide albidus vel rufidulus ; flores disci circ. 1.5 cm. longi stylo longe exserto incluso ; tubi pars inferior filiformis circ. 2 mm. longa, pars superior cylindrica circ. 6 mm. longa. Achaenia haud matura 2 mm. aequantia.

" Upper Burma :—On moss-covered rocks, on granite cliffs in shade of dwarf rhododendrons, ridge of Naung-Chaung, Nwai divide. Flowers dull crimson. 15th July 1914." Kingdon Ward. No. 1783.

44908 **Cremanthodium Wardii,** W. W. Sm. Sp. nov.

Species nana ex affinitate *Cremanthodii discoidei,* Maxim. ; foliis orbicularibus floribusque albis inter alia longe differt.

Caulis simplex 8–10 cm. altus fulvo-araneoso-villosus. Folia basalia circ. 4, petiolo ad 3 cm. longo araneoso-villosulo praedita ; lamina reniformis vel orbicularis, circ. 1.5 cm. diametro, basi

breviter excisa, margine dentata dentibus 12–20 mucronulatis, in sicco papyracea, utrinque sparsissime araneoso-pubescens vel glabrescens ; folia caulina 2–3, secus caulem distributa petiolo longe vaginante praedita ; lamina ut in foliis radicalibus ; folia bracteiformia 2–3 subulata prope involucrum inserta. Capitulum nutans discoideum album. Involucri phylla 7–12, circ. 1.3 cm. longa, 3–5 mm. lata, lanceolata, acuta vel breviter acuminata, basi villosula, supra glabrescentia, ex collectore alba. Flores ligulati nulli ; disci flores involucro multo breviores ; tubi pars infima filiformis vix 1 mm. superans, pars superior anguste campanulata circ. 2.5 mm. longa. Pappus 3 mm. longus fragilis albus. Achaenia immatura.

" Upper Burma :—Amongst granite boulders and rocks growing in wet moss in sheltered places. Near summit of granite mountain at an elevation of 13,000 ft., ridge of Naung-Chaung, Nwai divide. Flowers pure white. July 1914." Kingdon Ward. No. 1796.

43611 **Desmodium praestans,** G. Forrest. Sp. nov.

. Species pulchra foliis permagnis simplicibus basi rotundato-truncatis subtus dense albido-tomentosis conspicua.

Frutex 1.2 –2.7 m. altus ; ramuli subteretes primo densissime molliterque albido-tomentosi, tandem glabrescentes sordide brunnei. Folia simplicia petiolo 1–2.5 cm. longo valido apice basique incrassato dense albido-tomentoso et stipulis mox deciduis linearibus 7–8 mm. longis tomentosis praedita ; lamina saepe permagna, ad 22 cm. longa, ad 17 cm. lata (etiam prope inflorescentiam), nunc 5–15 cm. longa, 5–10 cm. lata, ovata vel suborbicularis, apice rotundata vel obtusa, breviter mucronata, basi truncato-rotundata vel rotundata, margine undulata, in sicco papyracea, supra pallide viridis dense molliterque incano-pilosa vel -tomentosa, infra densissime albido-tomentosa ; nervi 5–6 paria supra paululo eminentes conspicui, infra prominuli cum nervulis reticulum manifestum formantes. Flores purpureo-coerulei in paniculam terminalem amplam ad 27 cm. longam ad 19 cm. latam dispositi ; rhachis ramosa cum ramis primariis ad 15 cm. longis dense tomentosa ; bracteae ovatae vel lanceolatae ad 1 cm. longae dense albo-tomentosae ; pedicelli ad 1 cm. longi patenter tomentosi. Calyx circ. 4 mm. longus dense villosus in lobos ovatos obtusiusculos fere ad medium fissus. Corolla circ. 1 cm. longa glabra. Fructus (unus tantum visus) vix maturus circ. 2.5 cm. longus breviter stipitatus, articulis 4, dense adpresso-sericeus.

" China :—Mekong Valley, Yunnan. Lat. 27° 40′ N. Alt. 8000 ft. Shrub of 6–9 ft. Flowers purple-blue. Dry situations amongst rock and scrub. Aug. 1914." G. Forrest. No. 13,096.

" Mountains in the N.E. of the Yangtze bend, Yunnan. Lat. 27° 45′ N. Alt. 10,000 ft. Shrub of 4–8 ft. Flowers bright blue. In open scrub. July 1913." G. Forrest. No. 10,387.

" On the Chungtien plateau, Yunnan. Lat. 27° 55′ N. Alt. 10,000 ft. Shrub of 6–7 ft. Flowers deep purple-blue. Open situations of the margins of thickets. Aug. 1913." G. Forrest. No. 10,918.

Dischidia cylindrica, W. W. Sm. Sp. nov.

Species ex affinitate *D. tubuliflorae,* King et Gamble a qua corollae tubo intus villoso, lobis glabris recedit.

Planta epiphytica repens caulibus tenacissimis puberulis. Folia 3.5–4 cm. longa, ± 1.2 cm. lata, lanceolata, apice ± acuta, basi rotundata, coriacea utrinque glabra, siccando rugosula marginibus paululo recurvis ; costa gracilis basi glandula notata ; petiolus 1–2 mm. longus puberulus. Umbellae pauciflorae pedunculo ± 1 cm. longo suffultae ; flores tubulosi, comparabiles solummodo eis *D. tubuliflorae,* pedicellis 1–2 mm. longis praediti. Calyx vix 2 mm. superans lobis ovatis obtusiusculis extus sparse puberulis. Corolla anguste tubulosa usque ad 1.5 cm. longa, basi urceolata, supra aeque tubulosa, extus glabra, intus parte mediana villosa fauces versus glabra ; lobi circ. 2 mm. longi erecti carnosuli glabri. Coronae squamae 5 tenuissimae hyalinae supra rotundatae infra sagittatae, ex descriptione eis speciei supra citatae simillimae. Antherae erectae cellulis parallelis, appendicibus longis acuminatis supra in apiculum hyalinum cohaerentibus ; alae corneae basi caudatae ; pollinia oblonga caudiculis aequilonga. Styli subulato-acuminati. Fructus deest.

" Borneo :—Near Kuching, Sarawak ; a creeper in swampy country, flower yellow. April 1914." Native Collector No. 104 in Herb. Edin.

A very close ally of *D. tubuliflorae,* King and Gamble, from which it is distinguished by the corolla being villous within and the lobes glabrous. Both species are remarkable for the very elongated corolla tube.

Eriobotrya obovata, W. W. Sm. Sp. nov.

Species affinis *E. prinoidi,* Rehder et Wilson a qua foliis obovatis, petalis haud profunde emarginatis, stylis 3 stamina subaequantibus inter alia differt.

Arbor vel frutex ; altitudo non nota. Ramuli hornotini ferrugineo-tomentosi, annotini grisei glabrescentes. Folia persistentia coriacea petiolo circ. 2 cm. longo glabro vel glabrescente praedita ; lamina 8–11 cm. longa, 3–4.5 cm. lata, obovata vel

oblanceolata, apice rotundata ad summum ipsum abrupte breviterque acuminata, basi cuneata, dentibus incurvis sinuato-serrata, supra lucida vel sublucida glabra, infra pallidior, ad maturitatem glabra, costa media nervisque 10–14 paribus subtus eminentibus cum nervulis reticulum distinctum utrinque formantibus. Panicula terminalis, circ. 6 cm. longa, angusta, rufo-tomentosa; pedicelli 1–3 mm. longi rufo-tomentosi, ut bracteae bracteolaeque sublineares caducae. Flores circ. 1.5 cm. diametro; calycis tubus turbinatus 3.5 mm. longus, rufo-villosus, lobi anguste ovati, 2 mm. longi, valde reflexi, extra rufo-villosi, intus glabri. Petala obovata, circ. 5 mm. longa, apice rotundata vel breviter emarginata, longiuscule unguiculata, ad basim tantum villosula. Stamina 20, circ. 3 mm. longa. Ovarium biloculare apice dense villosulum; styli 3, stamina subaequantes, basi villosuli, ceterum glabri, liberi vel fere liberi. Fructus deest.

China :—In the vicinity of Yunnanfu, Yunnan. Maire. No. 2450. In Herb. Edin.

A near ally of *E. prinoides*, Rehder et Wilson, but differing in the obovate leaves, in the petals and styles.

1682 **Eriobotrya tengyuehensis,** W. W. Sm. Sp. nov.

Species affinis *E. bengalensi*, Hook. f. a qua foliis fere integris apice tantum pauci-serratulis floribus duplo majoribus inter alia recedit.

Frutex 6 m. altus vel arbor ad 18 m. alta; ramuli hornotini bene evoluti non visi, pars brevissima sub inflorescentia dense ferrugineo-tomentosa. Folia persistentia coriacea petiolo 2–3.5 cm. longo glabro vel glabrescente suffulta; lamina plerumque 12–17 cm. longa, 5–7 cm. lata, oblonga vel elliptica vel subobovata, apice abrupte breviterque acuminata, basi late cuneata, subintegra ad apicem pauci-serrata vel serratula, supra opaco-viridis glabra, infra pallidior subglabra hic illic indumenti juvenilis reliquiis conspersa; costa media supra vix impressa, infra eminens, nervis 10–15 paribus ad marginem percurrentibus prominulis, reticulo supra obscuro infra manifesto. Panicula terminalis thyrsoidea in exemplis nostris subsessilis, ad 10 cm. alta, ad 15 cm. lata, dense ferrugineo-tomentosa; pedicelli 3–5 mm. longi, tomentosi ut bracteae caducae. Flores circ. 2 cm. diametro lacteo-flavidi; calycis tubus breviter cupuliformis circ. 3 mm. longus extra tomentellus, lobi anguste ovati, circ. 2 mm. longi obtusiusculi patentes extra tomentelli intus glabri. Petala circ. 8 mm. longa obovata glabra. Stamina 20 circ. 5 mm. longa. Ovarium biloculare apice dense villosulum; styli 2 vel 3, circ. 3 mm. longi, ad medium vel ultro connati, longiuscule ferrugineo-villosuli. Fructus deest.

" China :—Shweli-Salween divide, Yunnan. Lat. 25° 5′ N.

Alt. 7000 ft. Tree of 40–60 ft. Flowers creamy-yellow. Open forests. May 1913." G. Forrest. No. 9857.

" Machang-kai Valley, north of Tengyueh. Lat. 25° 20′ N. Alt. 6000–7000 ft. Shrub of 25–40 ft. Flowers creamy-yellow, fragrant. In thickets. April 1913." G. Forrest. No. 9847.

" Hills north of Tengyueh. Lat. 25° N. Alt. 8000 ft. Shrub of 20–30 ft. Flowers creamy-yellow, fragrant. In open thickets. April 1914." G. Forrest. No. 12,298.

5901 **Erysimum bhutanicum,** W. W. Sm. Sp. nov.

Species ex affinitate *E. cheiranthoidis,* Linn., *E. hieraciifolii,* Linn., et *E. repandi,* Linn. sed floribus majoribus inferioribus bracteatis, pedicellis multo longioribus inter alia recedit.

Planta annua 45–80 cm. alta. Folia radicalia non visa; superiora spathulata vel oblanceolata, in petiolum 3–4 cm. longum alatum vix discretum angustata; lamina ad 6 cm. longa, 1–1.8 cm. lata, apice acuta, basi cuneata, dentibus remotis utrinque 3–5 sinuato-denticulata, pilis adpressis bifurcatis vel trifurcatis albidis utrinque densiuscule conspersa. Inflorescentia fructifera ad 30 cm. longa; flores inferiores circ. 8 bractea foliacea foliis caulinis subsimili praediti; superiores ebracteati; bracteae superne decrescentes, tandem lineares; flores ipsi 1.3–1.5 cm. diametro, leviter fragrantes; pedicelli calyce multo longiores, tandem fructiferi ad 2 cm. elongati. Sepala circ. 6 mm. longa, oblonga, subscariosa, lateralia duo gibbosa. Petali unguis calycem paululo superans, lamina late obovata, circ. 5 mm. lata, aurantiaca. Siliquae ad 7.5 cm. longae, 1.25 mm. latae, plus minusve patentes, sparsim furcato-pilosulae. Semina ovoidea circ. 1.5 mm. longa brunnea.

" Bhutan :—Shado, Timpu. Alt. 13,000 ft. Coarse herb in meadow with orange flowers. Oct. 1914." R. E. Cooper. No. 3549. **(Fruiting plant only.)**

Flowering specimen in Herb. Edin., cult. Bees, Ltd., from seeds of No. 3449; upper leaves and flowers.

1034 **Euonymus clivicola,** W. W. Sm, Sp. nov.

Species affinis *E. porphyreae,* Loes. et *E. sanguineae,* Loes. a quibus floribus pentameris multo majoribus ad 14 mm. diametro inter alia facile distinguitur.

Frutex 6–9 m. altus; ramuli hornotini angulati glabri virides, annotini cinerascentes cortice foveolato-rugosulo praediti. Folia opposita petiolo 4–5 mm. longo suffulta decidua; lamina 6–12 cm. longa, 1.5–3 cm. lata, lanceolata, apice sensim et longiuscule acuminata, basi cuneata, margine denticulis incurvis crebro serrulata, in sicco tenuiter membranacea, glabra, supra viridis infra

multo pallidior ; costa media utrinque albida distincta nervis supra subobscuris infra paulo distinctioribus. Inflorescentiae 1–3-florae pedunculis gracilibus arcuatis 3–5 cm. longis suffultae ; pedicelli circ. 5 mm. longi. Flores pentameri ex collectore virides 11–14 mm. diametro ; sepala reniformia circ. 1.5 mm. diametro ; petala orbicularia vel ovalia 4–5.5 mm. longa (in sicco tenuissime membranacea albida) ; fructus deest.

" China :—On the Tong Shan, Yunnan. Lat. 27° 20′ N. Alt. 9000 ft. Shrub of 20–30 ft. Flowers green. In open thickets. July 1914." G. Forrest. No. 12,690.

A slender shrub, well distinguished amongst its immediate deciduous allies by the longly lanceolate leaves and the large pentamerous flowers.

Euonymus decora, W. W. Sm. Sp. nov.

Species alternifolia tantum cum *E. yunnanensi,* Franch. comparabilis, a qua habitu arboreo, foliis latioribus inter alia divergit.

Arbor 9–12 m. alta ; ramuli hornotini angulati pallido-cinerei glabri. Folia alterna petiolo 4–7 mm. longo glabro praedita ; lamina plerumque 3.5–5 cm. longa, 2.5–3 cm. lata, ovalis vel late obovata, apice obtusa vel rotundata ad summum ipsum breviter apiculato-acutata, basi late cuneata vel rotundata, margine denticulis vel serraturis minutis remotis notata fere integra, coriacea, glabra, supra laete viridis elevato-reticulata, infra subglauca. Flores non visi sed ex vestigiis pentameri ; pedunculi fructiferi foliis longiores, initio 1–3-flori ; pedicelli ad 1.5 cm. longi ; sepala ovata vel rotundata 3 mm. longa ; staminum filamenta 3 mm. longa, antherae 1.5 mm. longae. Capsula quoad formam atque dehiscentiam similis ei *E. grandiflorae,* Wall. sed multo major et pentamera, circ. 2 cm. longa ; valvulae 6–8 mm. latae ; semina in quoque loculo 1–2, oblonga, 8–10 mm. longa, circ. 3 mm. lata, rubro-purpurea, arillo aurantiaco semiinclusa.

" China :—Ghi Shan, east of Tali Lake, Yunnan. Lat. 25° 40′ N. Alt. 7000 ft. Tree of 30–40 ft. In open thickets, in fruit. Aug. 1914." G. Forrest. No. 13,529.

In many points this species comes very near *E. yunnanensis,* Franch., which I have not seen. It is described as a small shrub of 3–4 feet. Besides the arboreal habit, *E. decora* differs in the shorter but broader leaves, broadly cuneate at the base. Both plants are found near Tali. Unfortunately for purposes of close comparison, Delavay's specimen is in flower only, Forrest's in fruit.

Euonymus lichiangensis, W. W. Sm. Sp. nov.

E. linearifolia, Forrest nec Franch. in Notes R.B.G. Edin., vii (1912), 81, 134.

Species haec ab *E. linearifolia,* Franch. foliis oppositis nec alternis nec verticillatis, floribus tetrameris inter alia facile distinguitur; affinis est *E. nanoides,* Loes. et Rehd. quae foliis minoribus ad costam nervosque minute hirtulis differt; *E. nana,* Bieb. foliis alternis vel verticillatis recedit.

Frutex 0.6–2.4 m. altus erectus virgatim ramosus; ramuli hornotini quadrangulati, lineis albidis subquadrialati, lenticellis lepidiformibus minute et densissime verruculosi, tenues glabri virides; annotini subsimiles virides. Folia fere sessilia petiolo nunc fere ad 1 mm. longo nunc obsolescente praedita, opposita, persistentia; lamina linearis plerumque 3–5 cm. longa, 2–3 mm. lata, apice acuta et breviter apiculata, margine remote et subobsolete denticulata, in sicco papyracea, utrinque glabra, supra viridis, subtus vix pallidior. Cymae axillares 1–3-florae raro 5-florae saepe prope basim ramulorum novorum plus minusve aggregatae et ex axillis foliorum squamiformium ortae glabrae; pedunculi ad 1 cm. longi, pedicelli ad 5 mm., bracteae circ. 1 mm. subulatae rubescentes. Flores virides circ. 7 mm. diametro; sepala ovata circ. 1 mm. longa; petala ovata circ. 2 mm. longa. Staminum filamenta brevia antheris paulo longiora. Ovarium in discum immersum. Capsula 4-mera, obpyramidata, lobata, dorso loborum paululo costato, apice subintrusa, circ. 1 cm. longa, 1.2–1.3 cm. lata, rubescens; semina solitaria purpurea arillo fere ex toto occlusa.

"China:—Shady situations in dense pine forests on the eastern flank of the Lichiang Peak, Yunnan. Lat. 27° 30′ N. Alt. 9000–10,000 ft. Sept. 1904." G. Forrest. No. 1125.

"Very shady moist situations in pine forests on the eastern flank of the Lichiang Range. Lat. 27° 25′ N. Alt. 11,000 ft. Shrub of 4–8 ft. Flowers green. June 1906." G. Forrest. No. 2475.

"Open situations amongst scrub and in pine forests on the eastern flank of the Lichiang Range. Lat. 27° 15′ N. Alt. 10,000–11,000 ft. Shrub of 2–4 ft. Flowers green. May 1910." G. Forrest. No. 5620.

The above specimens from the Lichiang Range were at first identified as *E. linearifolia,* Franch. But the latter, according to Franchet, has alternate leaves 6–10 cm. long and pentamerous flowers. The species is much nearer *E. nana,* Bieb.

Euonymus Monbeigii, W. W. Sm. Sp. nov.

Species valde affinis *E. Giraldii*, Loes. et *E. sanguincae*, Loes. a quibus inflorescentiis praelongis effusis folia saepe duplo superantibus distinguitur ; haud procul ab *E. dasydictyone*, Loes. et Rehd. quae e descriptione foliis basi cuneatis pedunculis multo brevioribus divergit.

Frutex 3–8 m. altus vel fortasse arbor ad 12 m. ; ramuli hornotini angulati glabri virides, annotini cinerascentes vel brunnei. Folia opposita petiolo circ. 1 cm. longo breviter alato glabro praedita decidua ; lamina plerumque 5–7 cm. longa, 3–4 cm. lata, ovata vel ovato-elliptica, apice acuta vel breviter acuminata, basi rotundata vel late cuneata, margine denticulis incurvis crebro serrulata, membranacea vel subchartacea, supra atroviridis glabra venis venulisque ultimis sub lente minutissime puberulo-asperulatis itaque subconspicuis, infra olivacea glabra nervis utrinque 5–6 paribus. Inflorescentiae ad 10–12 cm. longae ter quaterve divisae effusae glabrae ; pedunculus 6–7 cm. longus apice plerumque in ramulos quinque divisus, gracilis sed tamen rigidulus ; pedicelli ultimi 2–4 mm. longi. Flores tetrameri virides ; sepala orbicularia 1 mm. diametro ; petala oblanceolata vel lanceolata, circ. 3 mm. longa, acuta vel obtusiuscula. Fructus cruciatim 4-alatus teste specimine Wardiano sub n. 697 fructu immaturo ; si schedae Forrestianae sub n. 12,930, 13,447, huc recte allocatae, fructus maturus ei *E. sanguineae* similis sed alis brevioribus praeditus.

China :—N.W. Yunnan. 1907. Monbeig. No. 58 (type).

Tseku, N.W. Yunnan. May. Monbeig. No. 3 (1912).

" N.W. Yunnan, near Atuntsu. 10,000–13,000 ft. Small tree of 15–20 ft. in shrub belt. June–July 1913." F. Kingdon Ward. Nos. 351, 474, 697.

The following also appear to belong here, the first very young, the others in mature fruit :—

" Chungtien plateau, Yunnan. Lat. 27° 30′ N. Alt. 9000 ft. Shrub of 12–25 ft. Flowers green. In open situations amongst rocks. April 1914." G. Forrest. No. 12,436.

" Mekong Valley, Yunnan. Lat. 27° 40′ N. Alt. 10,000 ft. Shrub of 20–30 ft. Is found in open thickets. Aug. 1914." G. Forrest. No. 12,930.

" Mekong-Salween divide, Yunnan. Lat. 28° 16′ N. Shrub of 20 ft. Fruits scarlet. In open thickets and pine forests. Oct. 1914." G. Forrest. No. 13,447.

Euonymus oresbia, W. W. Sm. Sp. nov.

Species affinis *E. lichiangensi*, W. W. Sm. a qua foliis minoribus oblanceolatis crebro serratulis inter alia differt ; *E. nanoides*,

Loes. et Rehd., *E. Przewalskii*, Maxim., *E. saxicola*, Loes. et Rehd. sunt affines sed foliorum characteribus satis distant.

Frutex 1–2 m. altus erectus patentim atque virgatim ramosus ; ramuli hornotini quadrati crassiusculi virides glabri lenticellis minimis papillosi ; annotini virides ad angulos decorticantes. Folia petiolo glabro circ. 1 mm. longo suffulta, opposita, subpersistentia ? ; lamina anguste oblanceolata, circ. 2 cm. longa, paulo supra medium latissimum ibique 4–5 mm. lata, apice obtusiuscula, basi cuneata, margine crebro serrulata, in sicco papyracea, utrinque glabra atque subconcolor. Cymae axillares 1–3-florae ; pedunculi fructiferi plus minusve 5 mm. longi. Flores (vestigia tantum) 4-meri ; sepala circ. 1 mm. longa rotundo-ovata ; staminum filamenta brevia circ. 1 mm. longa. Capsula 4-mera, obpyramidata, ita lobata ut cruciformis ab vertice videatur, circ. 7–8 mm. longa, circ. 1.1 cm. lata, lobulis triangularibus 4 mm. longis ; semina in quoque loculo solitaria.

"China :—Mountains of the Chungtien plateau, S.E. of Chungtien, Yunnan. Lat. 27° 55′ N. Alt. 10,000–11,000 ft. Shrub of 3–6 ft. In fruit, in open thickets. July 1913." G. Forrest. No. 10,453.

1039 **Euonymus pygmaea,** W. W. Sm. Sp. nov.

Species habitu nano, caule simplici vel infra pauciramoso, aliquatenus radicante, foliis paucis deciduis ellipticis bene notata ; affinitas dubia ; cum *E. Giraldii*, Loes. ejusque sociis fortasse collocari potest.

Fruticulus in scheda 18–30 cm. altus, ex collectore ad 68 cm. attingens ; caulis inferior aliquatenus radicans, superior viridis glaber, simplex vel pauciramosus. Folia opposita petiolo 6–7 mm. longo glabro suffulta decidua pauca saepius 2–4 tantum ad apicem plantae evoluta ; lamina vulgo 6–8 cm. longa, 2–3 cm. lata, elliptica, apice obtuse angustata vel subrotundata, basi cuneata, margine crebro indurato-serrulata, in sicco submembranacea, utrinque glabra, supra viridis, subtus pallido-viridis, nervis 8–10 paribus in sicco subconspicuis. Inflorescentiae plerumque circ. 3, ex axillis foliorum delapsorum (minimorum vel squamiformium) ortae, 3–7-florae ; pedunculi graciles 2–3 cm. longi glabri ; pedicelli 1 cm. longi ; flores desunt sed ex vestigiis tetrameri sepalis rotundatis 1 mm. diametro. Capsula 4-mera, subglobosa alis 2–3 mm. latis quadrialata, 1–1.2 cm. diametro (submatura) ; loculi saepe 1–2 tantum seminiferi ; semina disciformia (forsan siccando paulo complanata) circ. 6 mm. diametro arillo aurantiaco inclusa.

"China :—Western flank of the Shweli-Salween divide, Yunnan. Lat. 25° 20′ N. Alt. 7000–8000 ft. Dwarf shrub

of 1–2 ft. In fruit. Open rocky pasture. Aug. 1912." G. Forrest. No. 8961.

Euonymus rostrata, W. W. Sm. Sp. nov.

Species proxima *E. Forbesianae*, Loes. a qua foliis lanceolatis sensim acuminatis supra medium tantum remote serrulatis, inflorescentiis numerosioribus recedit.

Frutex 6 m. altus. Folia opposita petiolo 3–5 mm. longo suffulta persistentia; lamina 7–9 cm. longa, 2–2.7 cm. lata, lanceolata vel elliptico-lanceolata, apice in acumen obtusiusculum sensim caudato-attenuata, basi cuneata, margine parte inferiore integra, parte superiore remotiuscule serrulata, subcoriacea, glabra, supra olivacea, subtus pallidior, nervis utrinque fere obsoletis. Inflorescentiae 1–4-natae plerumque bis divisae; flores cum eis *E. Forbesianae*, Loes. bene congruunt. Fructus deest.

"China :—Shweli-Salween divide, Yunnan. Lat. 25° 30′ N. Alt. 9000 ft. Shrub of 20 ft. Flowers dull greenish-yellow. In open situations in thickets. June 1913." G. Forrest. No. 11,851.

This is perhaps only a variety of *E. Forbesiana*, Loes. differing in the lanceolate leaves with a gradually acuminate apex and with a few remote teeth in the upper half; the leaf of *E. Forbesiana* is densely serrulate. The plant appears to be intermediate between the Yunnan *E. Forbesiana* and the entire-leaved Khasian *E. attenuata*, Wall.

Euonymus tengyuehensis, W. W. Sm. Sp. nov.

Species ex affinitate *E. hupehensis*, Loes. et *E. theifoliae*, Wall.; ramulis dense verruculosis, foliis magis coriaceis latioribus undulatim serrato-crenatis, reticulo nervulorum utrinque conspicuo, pedunculis ad 8 cm. longis, inflorescentiis sexties divaricato-divisis, floribus majoribus bene notata.

Frutex 1–2 m. altus, nonnunquam ad 9 m. attingens; ramuli subquadrati virides dense verruculosi et corrugati. Folia opposita petiolo circ. 1 cm. longo crasso praedita plus minusve coriacea persistentia; lamina 9–12 cm. longa, 3–6 cm. lata, elliptica vel elliptico-oblonga, rarius ovato-lanceolata, apice acuta vel breviter acuminata, raro rotundata, basi plerumque rotundata, rarius late cuneata, margine undulatim obtuseque serrato-crenata, nonnunquam remotiuscule serratula, utrinque glabra, supra atroviridis primo plus minusve lucida, infra pallido-olivacea; nervi primarii 5–7 paria nervulique utrinque reticulum conspicuum formantes. Inflorescentiae amplae saepius sexties divaricato-divisae; pedunculus ad 8 cm. longus quadrangulus

dense verruculosus, ramulis ad ultimos rigidiusculis angulatis, bracteis numerosis lanceolatis vel subulatis. Flores tetrameri 8–9 mm. diametro pallido-flavi ; sepala reniformia circ. 1 mm. diametro ; petala suborbicularia breviter lateque unguiculata, circ. 3 mm. longa ; filamenta antheras paulo superantia. Fructus 4-merus vix maturus globosus haud alatus circ. 9 mm. diametro ; semina solitaria purpurea arillo aurantiaco inclusa.

" China :—Hills to the N.W. of Tengyueh, Yunnan. Lat. 25° 10′ N. Alt. 6000–7000 ft. Shrub of 3–5 ft. Flowers greenish-yellow. Open situations amongst scrub. Nov. 1912." G. Forrest. No. 9313.

" Divide between the Shweli and Tengyueh Valleys. Lat. 25° N. Alt. 7000 ft. Shrub of 6–8 ft. In fruit. Open situations. July 1912." G. Forrest. No. 8658.

" Shweli Valley, Yunnan. Lat. 25° 20′ N. Alt. 6000 ft. Shrub of 30 ft. Flowers creamy-white. In open thickets. July 1913." G. Forrest. No. 11,937.

This species is closely akin to *E. hupehensis*, Loes., especially to the variety *longipedunculata*, Loes.

Euonymus Wardii, W. W. Sm. Sp. nov.

Species ex affinitate *E. myrianthae*, Hemsl. sed foliis caudato-acuminatis, pedunculis gracillimis praelongis bene notata.

Frutex 2–3.5 m. altus ; ramuli glabri pallido-virides. Folia opposita petiolo 1–1.2 cm. longo anguste alato glabro praedita persistentia ; lamina 11–17 cm. longa, 4–6 cm. lata, obovata vel oblanceolata, apice acumine 1.5–3 cm. longo acuto vel obtusiusculo caudato-acuminata, basi latiuscule cuneata, margine indurato-serrulata, in sicco papyracea, utrinque glabra, supra primo lucida mox opaca pallido-viridis, subtus paulo pallidior, nervis in sicco subconspicuis primariis 6–7 paribus. Inflorescentiae circ. 15-florae ex axillis foliorum delapsorum (squamiformium ?) inter paria duo foliorum hornotinorum ortae, oppositae, ter dichotome furcatae ; pedunculi arcuati gracillimi glabri, primarii 7–8 cm. longi, secundarii circ. 3 cm. longi ; pedicelli circ. 1 cm. longi. Flores tetrameri ; sepala suborbicularia circ. 2 mm. diametro ; petala late ovata vel suborbicularia 5 mm. longa ; stamina fere sessilia ; fructus deest.

" Burma :—At Htawgaw, valley of Naung-Chaung, Lashi country, East Upper Burma. Small shrub of loose habit, 8–12 ft. Flowers greenish. Damp shady gullies in forest. May 1914." F. Kingdon Ward. No. 1543.

Quite unlike any Euonymus recorded from Burma.

1283 **Evodia vestita,** W. W. Sm. Sp. nov.

Species sectionis *Oxyactis,* Rehder et Wilson, ex affinitate *E. Henryi,* Dode et *E. hupehensis,* Dode a quibus foliis subtus velutinis inter alia differt; ab *E. velutina,* Rehder et Wilson inflorescentiis subsessilibus, carpellis longe rostratis recedit.

Frutex 6–8 m. altus. Ramuli hornotini dense fulvido- vel ferrugineo-velutini. Folia 3–4-juga, cum petiolo ad 35 cm. longa; petioli 2–7 cm. longi ut rhachis dense velutini; foliola petiolulo 2–7 mm. longo suffulta, ad 13.5 cm. longa, ad 5 cm. lata, ovato-lanceolata vel oblongo-lanceolata, apice plerumque acuminata acumine ipso obtusiusculo vel acutiusculo, basi rotundata vel late cuneata, minute crenulata, supra obscure viridia infra cinerea, supra sparsim pilosula glabrescentia, ad costam paulo densius, infra ex toto dense molliterque villosa; nervi utrinque 10–12. Flores desunt. Inflorescentia fructifera subsessilis, late et dense paniculata, ad 8 cm. alta, ad 10 cm. lata, ramis ramulisque dense velutinis. Fructus brunneus ad 7 mm. altus, sparsim villosus; carpella 4–5, erecto-patentia obovata acumine circ. 3 mm. longo praedita intus villosula; semina in quoque loculo duo inaequalia, majora fere 4 mm. longa, superposita, nitentia, nigra.

"China :—On the Tong Shan in the Yangtze bend, Yunnan. Lat. 27° 20′ N. Alt. 9000–10,000 ft. Shrub of 20–30 ft. In fruit. In open thickets. Sept. 1913." G. Forrest. No. 11,091.

This species is very closely allied to *E. velutina,* Rehder et Wilson, but differs in the subsessile inflorescence and long-beaked carpels.

1043 **Gymnosporia berberoides,** W. W. Sm. Sp. nov.

Species affinis *G. variabili,* Hemsl. a qua ramulis minute glanduloso-puberulis, foliis minoribus obovatis ad costam minute puberulis inter alia abunde discrepat.

Frutex 1–2 m. altus ramulis primo paulo complanatis minute glanduloso-puberulis, annotinis cinerascentibus tarde glabrescentibus; spinae circ. 1 cm. longae magnitudine formaque eis *Crataegi oxyacanthae,* Linn. subsimiles. Folia alterna petiolo 2–3 mm. longo minute puberulo suffulta; lamina in spec. florifero 2–3 cm. longa, 1–1.5 cm. lata, in spec. fructifero major ad 4.5 cm. longa, ad 3.5 cm. lata, obovata, apice rotundata saepe emarginata, basi cuneata, margine subregulariter serrulata, in sicco tenuiter papyracea, supra atroviridis sublucida, infra pallidior, utrinque ad costam nervosque minute puberulo-asperata, reticulo nervorum utrinque plus minusve conspicuo. Flores in cymulas 3–5-floras dispositi; pedunculi circ. 2 cm. longi graciles sparsim puberuli vel glabri; pedicelli circ. 5 mm.

longi ; bracteae minutae subulatae. Sepala 5, ovata, obtusiuscula, circ. 2 mm. longa, glanduloso-ciliata. Petala ovato-lanceolata, obtusa, circ. 4 mm. longa. Stamina 5 filamentis 2 mm. longis sub discum insertis. Ovarium conoideum circ. 2 mm. longum stylo brevi stigmate trilobo coronatum. Fructus maturus fere 1 cm. longus trilocularis, loculis unispermis, seminibus brunneis circ. 5 mm. longis arillo pallido basi cinctis.

"China :—Mountains in the N.E. of the Yangtze bend, Yunnan. Lat. 27° 45′ N. Alt. 9000 ft. Spinous shrub of 3–4 ft. Flowers pale yellow. Dry open situations amongst boulders. Aug. 1913." G. Forrest. No. 10,738.

"Yung-pe Mountains, Yunnan. Lat. 26° 45′ N. Alt. 9000 ft. Spinous shrub of 3–6 ft. In fruit. Capsules pale yellow, seeds brown. Open dry situations. Sept. 1913." G. Forrest. No. 11,387.

Hemerocallis nana, G. Forrest et W. W. Sm.

Species affinis *H. fulvae,* Linn. var. *angustifoliae,* Baker a qua habitu nano, floribus solitariis vel binis anguste cylindricis segmentis angustissimis recedit.

Planta 25–50 cm. alta. Caulis reliquiis foliorum praeteritorum fibrosis basi dense circumdatus. Folia 8–12 cm. longa, 4–6 mm. lata, linearia, obtusiuscule acuminata. Flores solitarii vel bini rubicundo-aurantiaci pedunculo 4–12 cm. longo suffulti ; pedicelli circ. 1 cm. longi ; bracteae membranaceae ovatae vel lineari-lanceolatae. Perianthium plus minusve 6 cm. longum ; tubus 1 cm. paulo superans, in limbum sensim ampliatus ; segmenta exteriora linearia fere 5 cm. longa, 4–5 mm. lata, apice rubescentia, interiora paulo breviora tenuissima. Fructus immaturus in sicco 1.5 cm. longus, circ. 1 cm. latus.

"China :—Mountains in the N.E. of the Yangtze bend, Yunnan. Lat. 27° 45′ N. Alt. 10,000–11,000 ft. Plant of 5–10 inches. Flowers deep-red orange. Open stony pastures. July 1913." G. Forrest. No. 10,539.

A pretty dwarf species remarkable for the solitary or binate flowers with very narrow segments to the perianth, which itself shows very little dilation at the limb.

2298 **Hydrangea dumicola,** W. W. Sm. Sp. nov.

Species sectionis *Heteromallae* ex affinitate *Hydrangeae pubinervis,* Rehd. et *H. Bretschneideri,* Dippel a quibus foliorum forma indumentoque inter alia longe differt.

Frutex 3–5 m. altus ramulis junioribus dense rufo-crispato-scabridulis, vetustioribus tarde glabrescentibus. Folia superiora tantum visa, 10–20 cm. longa, 7–14 cm. lata, latissime ovata

ad ovato-lanceolata, apice acuta vel modice acuminata, basi plerumque plus minusve rotundata, crebre serrato-denticulata, in sicco papyracea, supra viridia glabra, infra pallidiora ad costam nervosque nervulosque ultimos pilis acicularibus albidis subscabride obsita; petioli robusti 3–4 cm. longi crispato-scabriduli. Cyma convexa e radiis 5–7 approximatis composita 25–30 cm. diametro dense crispato-scabridula; pedicelli ultimi strigoso-scabriduli; flores radiantes 3–4.5 cm. diametro, sepalis 4 late ovalibus vel ovatis. Calycis dentes (florum fertilium) triangulares vix 1 mm. aequantes glabri. Petala oblonga circ. 2 mm. longa pallido-flavida. Stamina inaequalia, majora corollam paulo superantia, minora petalis breviora; antherae violaceae. Ovarium semisuperum stylis 3 erectis coronatum. Capsula ovoidea cum stylis persistentibus circ. 4 mm. longa, 2.5 mm. lata; semina fusiformia 1 mm. paulo superantia apice basique in alam protracta brunnea.

"West China:—Shrub of 10–15 ft. Sterile florets pale yellow, fertile florets same with violet anthers. Open situations in thickets in the Mingkwong Valley, Yunnan. Lat. 25° 20′ N. Alt. 6500–7000 ft. July 1912." G. Forrest. No. 8705.

"Shrub of 10–15 ft. Fertile florets dull yellow, anthers soft lavender. Sterile florets light yellow. Open situations amongst scrub in the Mingkwong Valley. Lat. 25° 20′ N. Alt. 6000–7000 ft. June 1912." G. Forrest. No. 8391.

Near Tengyueh, Yunnan, West China. Howell. No. 51.

A robust species with large leaves and ample inflorescence. The under surface of the leaves is covered almost entirely with white needle-like hairs which follow the venation up to the ultimate reticulations. The character of this indumentum marks it off very easily from the other members of the section.

457 **Ilex atrata,** W. W. Sm. Sp. nov.

Species affinis *I. sikkimensi*, King a qua perulis albo-ciliatis, costa media subtus dense fulvo-tomentosa, calyce plerumque 5-mero, fructibus scarlatinis saepius 5-pyrenis inter alia recognoscitur.

Arbor usque 6-metralis. Ramuli hornotini 4–6 mm. crassi glabri striato-sulcati. Gemmae circ. 2 cm. longae perulis magnis ovatis 1–1.5 cm. longis margine longiuscule albo-ciliatis obtectae. Folia in alterum annum in ramulis remanentia petiolo 2–3 cm. longo ad 3 mm. lato alato praedita; lamina vulgo 12–15 cm. longa, 4-5 cm. lata, plus minusve elliptica, apice mediocriter acuminata, basi rotundata vel late cuneata, margine in sicco paululo recurvata minute et densissime serrulata, tenuiter coriacea supra glabra nitida atroviridis, subtus vix pallidior ad costam dense fulvo-tomentosa caeterum glabra, costa media

supra plana infra eminente, nervis utrinque 12–15 in sicco distincte reticulatis. Inflorescentiae ♀ 1–3-florae pedunculis 3–5 mm. longis, pedicellis (in fructu) 5–8 mm. longis. Calyx (explanatus) ad 4 mm. diametro lobis ovatis obsolete ciliolatis. Corolla staminaque non visa. Drupa globosa stigmate plano-discoideo coronata, circ. 6 mm. diametro, in vivo (ex Forrest) scarlatina, in sicco nigro-brunnescens, vulgo 4–5-pyrena, pyrenis trigonis dorso convexis ad 5.5 mm. longis ad 2.5 mm. latis.

"China :—Hills to the N.E. of Tengyueh, Yunnan. Lat. 25° 12′ N. Alt. 7000–8000 ft. Shrub of 20 ft. In thickets. Fruits bright scarlet. Dec. 1912." G. Forrest. No. 9414.

458 **Ilex crenata,** Thunb., var. **scoriarum,** W. W. Sm. Var. nov.

A typo statura majore (ad 4 m.), ramulis minute et dense pubescentibus, foliis plerumque majoribus 3.5–5 cm. longis tenuiter coriaceis altius crenulatis, inflorescentiis ♂ saepius 3–7-floris divergit ; haud procul ab *I. Thomsoni,* Hook. f. quae a cl. Loesener pro varietate *I. crenatae* habetur.

"China :—West of Tengyueh, Yunnan. Lat. 25° N. Alt. 5000 ft. Shrub of 8–12 ft. Flowers green. In thickets on the outskirts of lava-bed. May 1912." G. Forrest. No. 7867.

"Flank of volcanic mountain to the west of Tengyueh. Alt. 7000 ft. June 1912." G. Forrest. No. 8113.

Forrest No. 8338 from same locality is probably the same. An unnamed sheet of Henry, No. 11,303, collected on mountains north of Mengtsz, at 9000 ft. a shrub of 10 ft., in fruit is, I believe, the same. Its leaves attain a length of 7.5 cm., much in excess of those of typical *I. crenata.*

This Yunnan plant appears to be intermediate in its character between the Japanese *I. crenata* and the Sikkim and Khasian *I. Thomsoni.* It does not match either exactly.

459 **Ilex dipyrena,** Wall., var. **connexiva,** W. W. Sm. Var. nov.

A typo atque var. *paucispinosa,* Loes. foliis basi cuneatis margine integerrimis recedit ; *I. Clarkei,* Loes. species manipurensis valde affinis foliis longius petiolatis differt.

"China :—Chungtien plateau, Yunnan. Lat. 27° 30′ N. Alt. 10,000 ft. Shrub of 10–15 ft. In fruit. Open situations amongst rocks. June 1914." G. Forrest. No. 12,528.

This variety appears to form a connecting-link between the less spinose forms of *I. dipyrena,* Wall. and the entire-leaved *I. Clarkei,* Loes. The latter is regarded by Loesener himself as possibly a variety of *I. dipyrena.* The present variety is scarcely equivalent to the Manipur plant, and is nearer it than to any form of *I. dipyrena.* The fruit has two to three pyrenes.

Illigera Henryi, W. W. Sm. Sp. nov.

Species affinis *I. trifoliatae,* Dunn, sed fructibus praemagnis fere 12 cm. latis facile recognoscenda.

Frutex alte scandens. Caulis striatus cito glabrescens. Folia trifoliolata, petiolo 8–12 cm. longo glabro suffulta ; petioluli 2.5–3.5 cm. longi ; foliola plus minusve elliptica, 8–13 cm. longa, 5–7 cm. lata, papyracea, apice breviter atque abrupte acuminata, basi plus minusve rotundata, utrinque glabra minute papillosa. Flores in cymas longiuscule pedunculatas folia superantes primo dense fulvo-tomentellas compositi. Calycis tubus circ. 4 mm. longus dense tomentellus ; lobi 11–12 mm. longi, 2–3 mm. lati, lineari-oblongi, utrinque pubescentes. Petala sepalis similia paululo breviora. Stamina circ. 6 mm. longa, filamentis pilosulis, antheris fere 3 mm. longis, nectariis tubulosis circ. 3 mm. longis parte superiore ovato-cupularibus, glandulis disci dentiformibus. Stylus circ. 7 mm. longus stigmate undulato-dilatato. Fructus tetrapterus ad 12 cm. latus, ad 5 cm. longus, subglaber, alis majoribus 6 cm. latis, minoribus 2 cm. latis.

"China :—Yunnan, near Mengtsz, S.E. mountain forests. 5000 ft. Large climber. Henry." Nos. 11,402, 11,043.

Illigera mollissima, W. W. Sm. Sp. nov.

Species affinis *I. cordatae,* Dunn, sed foliis supra subscabridis infra dense pilosis, fructibus pilosulis aliter alatis recedit.

Frutex alte scandens. Caulis striatus albido- vel fulvido-pilosus tarde glabrescens. Folia trifoliolata, petiolo 8–12 cm. longo molliter piloso suffulta ; petioluli 1.5–4 cm. longi ; foliola late elliptica vel ovata vel suborbicularia, 4.5–12 cm. longa, 4–8 cm. lata, crasse papyracea, apice breviter atque abrupte acuminata, basi cordata, supra subscabride pilosa infra dense molliterque albido- vel fulvido-pilosa. Flores in cymas pedunculatas foliis breviores molliter pilosas compositi ; flores ipsi non visi. Fructus tetrapterus 3.5–4.5 cm. latus, circ. 2.5 cm. longus, molliter pilosulus alis lateralibus circ. 2 cm. latis pilosulis, alis caeteris 5–7 mm. vix superantibus.

"China :—Mountains in the N.E. of the Yangtze bend, Yunnan. Lat. 27° 45′ N. Alt. 10,000 ft. Scandent shrub of 30 ft. In fruit. On trees and scrub in open situations. Aug. 1913." G. Forrest. No. 10,770.

Indigofera mekongensis, Jesson.

I. nigrescenti, Kurz arcte affinis, sed racemis brevioribus, calycis lobis longioribus, facile distinguenda.

Caules virides pilis sparsis brunneis instructi, ad 3 m. alti in cultura, basi 1–1.5 cm. diametro. Folia 17–25-foliolata, 16–19

cm. longa ; petioli 2.5–3 cm. longi, ut rhachis supra canaliculati et pilis brunneis adpressis instructi ; stipulae deciduae, ad 5 mm. longae, pubescentes ; petioluli 2 mm. longi, pilis brunneis adpressis densius tecti ; stipellae 1 mm. longae, persistentes ; foliola saepissime opposita, 2–2.5 cm. longa, 10–12 mm. lata, oblonga vel rarius obovato-oblonga, apice rotundata truncatave, emarginulata, mucronata, basi late cuneata, tenuiter membranacea, pagina superiore pilis albidis inferiore pilis albidis et brunneis intermixtis adpressis instructa, nervis lateralibus circiter 8, supra inconspicuis, subtus subconspicuis. Racemi circiter 10 cm. longi, foliis conspicue breviores, pedunculo communi 1.5–2.5 cm. longo cum rhachi ut caule pubescente suffulti ; pedicelli 0.5 mm. longi ; bracteae angustae, circa 3 mm. longae deciduae ; flores pallide rosei. Calycis adpresse fusco-brunneo-pubescentis tubus 1 mm. longus, lobi 1 mm. longi. Vexillum obovatum, 5 mm. longum, 4 mm. latum, dorso pilis adpressis densius tectum ; alae 7 mm. longae, 2 mm. latae ; carina 5 mm. longa, 2 mm. lata, obtusa.

China :—Mekong Valley, Yunnan. Cultivated in the Royal Botanic Garden, Edinburgh, from seed collected by G. Forrest. Not a decorative plant.

4443 **Justicia siccanea,** W. W. Sm. Sp. nov.

Species haec ex affinitate *J. quadrifariae,* Wall. esse videtur sed ab omnibus sectionis Calophanoidis speciebus facile distinguitur.

Fruticulus prostratus circ. 60 cm. longus ; caules e basi crasse lignosa orientes numerosi tortuosi flexiles paulo inter-texti primo dense cinereo-tomentelli tandem glabri cortice griseo rugoso vel verruculoso. Folia petiolo 3–8 mm. longo villosulo praedita ; lamina 1.5–4 cm. longa, 1–2 cm. lata, ovata vel lanceolata, apice rotundata vel obtusa vel subacuta, basi cuneata, utrinque sparsim vel subdense appresso-pilosula, in sicco membranacea. Flores inter parvos vix 1.5 cm. longi axillares plerumque solitarii vel bini paniculam vel spicam haud formantes ; pedicelli circ. 3 mm. longi cinereo-pubescentes, ut bracteae bracteolaeque 2–3 mm. longae. Calyx circ. 7 mm. longus in lobos 5 sublineares partitus pubescens. Corollae albae roseo-suffusae circ. 1.3 cm. longae extus puberulae tubus limbum subaequans rectus a basi ampliatus ; limbi labium posticum breviter bifidum, anticum trilobum lobis brevissimis rotundatis. Stamina 2 filamentis supra glabris prope insertionem albo-villosulis, antherarum loculis inferioribus albo-calcaratis. Stylus inclusus albo-pilosulus ; ovarium glabrum seminibus (vix maturis) complanatis.

" China :—Mekong Valley, Yunnan. Lat. 27° 40′ N. Alt.

7000 ft. Prostrate shrub of 2 ft. Flowers white, flushed rose exterior. Open dry situations. Aug. 1914." G. Forrest. No. 13,118.

Lespedeza (Campylotropis) atrokermesina, G. Forrest.

Species pulcherrima foliis subtus argenteo-tomentellis, floribus atrokermesinis bene notata.

Frutex 1.2–1.8 m. altus erectus ramis virgatis angulatis tomento brevi subargenteo adpresso dense indutis. Folia stipulis lineari-lanceolatis acuminatis circ. 5 mm. longis sericeo-tomentellis et petiolo ad 2.5 cm. longo dense sericeo-tomentello praedita ; foliola 3, terminale aliis paulo majus ; petiolulus medianus ad 1.5 cm. longus cum lateralibus 2–3 mm. longis dense sericeo-tomentellus ; lamina foliolorum 2.5–6 cm. longa, 2–4 cm. lata, elliptica vel obovata, apice rotundata, saepe alte emarginata, mucrone 1–2 mm. longo sericeo praedita, basi rotundata, in sicco chartacea, supra pallide viridis glabra, infra sericeo-argenteo-tomentella, costa media supra impressa subtus prominente sericea, nervis nervulisque utrinque pulchre et conspicuo reticulatis. Racemi axillares et terminales ad 10 cm. longi, simplices vel ramulum singulum exhibentes, dense sericei, inflorescentiam terminalem 16 cm. longam 12 cm. latam formantes ; bracteae stipulis similes ; pedicelli circ. 4 mm. longi cum bracteolis linearibus 2 mm. longis dense sericei. Calyx dense sericeus tubo circ. 2 mm. longo, lobis lineari-lanceolatis ad 4 mm. longis. Corolla 1.1–1.2 cm. longa atrokermesina ; vexillum circ. 4 mm. latum ; alae 9–10 mm. longae ; carina longe rostrata supra medium abrupte sursum curvata, pars inferior 7 mm., pars superior 4 mm. longa. Fructus maturus deest.

" China :—Mekong-Yangtze divide, Yunnan. Lat. 27° 30' N. Alt. 9000 ft. Shrub of 4–6 ft. Flowers black-crimson. Open situations amongst scrub. Oct. 1914." G. Forrest. No. 13,410.

Ligustrum rugosulum, W. W. Sm. Sp. nov.

Species affinis *L. yunnanensi,* L. Henry et *L. sinensi,* Lour. a quibus foliis rugosulis utrinque pilosulis inter alia valde divergit.

Frutex 2–5 m. altus erectus ; ramuli juniores dense fulvo-hirtelli, vetustiores glabrescentes cinerei. Folia petiolo 5–10 mm. longo dense fulvo-hirtello suffulta ; lamina vulgo 6–8 cm. longa, 2.5–3.5 cm. lata, ovato-lanceolata vel rarius subelliptica, basi subrotundata vel plus minusve cuneata, apice acuta vel obtusiuscula, in sicco firme papyracea, supra obscure viridis,

sparse pilosula, ad costam densius, nervis multo impressis rugosula, infra paululo pallidior, ad costam nervosque dense fulvo-hirtella, caeterum sparsim, nervis primariis distincte elevatis. Paniculae terminales ad 12 cm. longae et latae; axes omnes dense fulvo- vel rufido-hirtelli; pedicelli brevissimi vix 1 mm. superantes. Calyx circ. 1 mm. longus cupularis obsolete dentatus glaber. Corolla alba circ. 3 mm. longa; tubus brevis calyce paululo longior; lobi oblongi obtusiusculi tubum multo superantes. Filamenta lobis corollinis longiora antheris longiuscule exsertis. Fructus fere maturus globosus 3–4 mm. diametro.

China:—Mountains south of Mengtsz, Yunnan. At 5000 ft. Tree of 15 ft., with white flowers. Henry. No. 11,084B. In Herb. Edin.

In forests south-east of Szemao, Yunnan. At 4000 ft. Shrub of 7 ft. Henry. No. 12,803. In Herb. Edin.

A species readily recognised among the Chinese species by its foliage. Henry No. 11,084A in Herb. Edin. does not appear to be the same. The fruit is different, and the leaves do not match.

Lonicera angustifolia, Wall., var. **rhododactyla**, W. W. Sm. Var. nov.

Ramulis rubris primo minute puberulis mox glaberrimis nitentibus, foliis anguste obovatis vel oblanceolatis potius quam lanceolatis, apice rotundatis vel obtusis vix acutis haud acuminatis utrinque glaberrimis, bracteis, bracteolis, calycis dentibus, corolla (extus) glaberrimis a typo recedit; habitu, floris structura, ovariis connatis congruit.

"China:—Lichiang Range, Yunnan. Lat. 27° 30′ N. Alt. 10,000–11,000 ft. Shrub of 3–5 ft. Flowers rose-pink. Open situations in scrub. June 1913." G. Forrest. No. 10,054.

Lonicera chlamydata, W. W. Sm. Nom. nov.

L. chlamydophora, W. W. Sm. (nec Zabel) in Notes R.B.G. Edin., viii (1913), 109.

This species is more closely allied to *L. saccata,* Rehder than to *L. trichopoda,* Franch. as previously suggested. The flower of *L. chlamydata* is larger and fleshier than that of *L. saccata,* with a much broader tube, which is very densely hairy inside, while the style is setose rather than villous. The corolla is a deep golden yellow.

Two Yunnan sheets collected by F. Kingdon Ward appear to approach *L. saccata,* Rehder very closely. Ward No. 602, from boulder screes at 13,000 ft. in the Atuntsu district of N.W. Yunnan, almost matches the Szechwan plants—the

corolla is, however, about 13 mm. long. Ward No. 637, a shrub of 6–8 ft., in open places on screes at 14,000 ft., from the same area, is very similar, except for the glabrous style—perhaps that will prove to be at most only a varietal distinction. The affinity of these last is more with *L. saccata* than with *L. chlamydata*.

Lonicera cyanocarpa, Franch.

The flowers of this species have not hitherto been described :—

Corolla viridi-flava 1.5–1.8 cm. longa, extus setulis sparsis praedita vel subglabra ; tubus basi gibbosus, circ. 1–1 cm. longus, ore circ. 8 mm. basi circ. 3 mm. latus, intus plus minusve dense setosulus ; lobi rotundati subaequales circ. 6 mm. diametro utrinque glabri. Stamina lobis paulo breviora filamentis glabris, antheris oblongis circ. 3 mm. longis. Stylus corollam paululo superans, parte superiore glaber, inferiore setosulus. Ovaria circ. 3 mm. longa glabra.

"China :—Lichiang Range, Yunnan. Lat. 27° 30′ N. Alt. 12,000–13,000 ft. Dwarf shrub of 1–2 ft. Flowers green-yellow. On ledges of limestone cliffs and stony pasture. June 1913." G. Forrest. No. 10,276.

"S.E. Tibet :—Doker La, near Atuntsu ; alpine region at 14,000 ft. June 1913." F. Kingdon Ward. Nos. 542, 619.

"China :—Mountains of the Chungtien plateau, Yunnan. Lat. 27° 55′ N. Alt. 12,000 ft. Shrub of 2–4 ft. Fruits deep bluish-purple. Open stony alpine pasture. Sept. 1913." G. Forrest. No. 11,356.

Lonicera finitima, W. W. Sm. Sp. nov.

Species affinis *L. hispidae,* Pall. sed foliis multo minoribus, ovariis glabris inter alia differt ; quoad habitum *L. asperifoliam,* Hook. f. et Thoms. simulat, quae tamen foliis subtus pubescentibus, corolla minore inter alia recedit.

Fruticulus 30–60 cm. altus ramulis primo sparsim setosis atque minute puberulis subcoeruleis deinde cinerascentibus cortice fibroso praeditis. Gemmae pallide brunneae circ. 5 mm. longae oblongae glabrae perulis duabus exterioribus. Folia petiolo circ. 1 mm. longo setoso praedita ; lamina 7–20 mm. longa, 5–10 mm. lata, elliptica vel ovata, apice rotundata vel obtusa vel rarius acutiuscula apiculata, basi rotundata, coriacea, margine setoso-ciliata, supra setoso-scabrida, infra ad costam nervosque sparsim setosa, nervulis bene notatis. Pedunculi circ. 5 mm. longi, sparsim setosi atque minute puberuli. Bracteae late ovatae, circ. 12 mm. longae, longiuscule setoso-ciliatae extus setoso-scabridae. Calycis dentes fere obsoleti breves. Corolla

circ. 2 cm. longa, in sicco flavida, extus sparsim setosula ; tubus circ. 1.3 cm. longus, basi 2 mm. latus, supra ad 7 mm. ampliatus, intus setosulus ; lobi 6–7 mm. longi, oblongo-ovati subaequales. Stamina corollam plus minusve aequantia, filamentis glabris antheris circ. 2.5 mm. longis. Stylus corollam aequans glaber ; ovaria libera glabra annulo calycino vix dentato coronata. Fructus deest.

"S.E. Tibet :—Doker La, on the boundaries of Yunnan and Tibet, at an elevation of 13,000 ft. Dwarf shrub of 1–2 ft. on screes in the shrub belt. July 1913." F. Kingdon Ward. No. 701.

1047 **Lonicera Henryi,** Hemsl., var. **setuligera**, W. W. Sm. Var. nov.

Foliis minoribus, corollis extus setulis longiusculis conspersis aliquatenus a typo recedit.

China :—Near Tungchwan, Yunnan. Alt. 2600 m. Flowers white and yellow. Maire. No. 51 (anno 1913). In Herb. Edin.

This plant at first sight suggests something specifically different from *L. Henryi*, but it is united to that species by intermediates.

1048 **Lonicera inodora,** W. W. Sm. Sp. nov.

Species affinis *L. ferrugineae,* Rehder ; a qua inter alia ovario glabro differt ; a *L. ferruginea,* Rehder, var. *bullata,* Rehder (quae ovario glabro gaudet) habitu glabriore, foliis vix bullatis haud ciliatis, inflorescentiis fulvido-pubescentibus, stylo piloso recedit.

Frutex semiscandens 2–4 m. altus ramulis dense fulvo-tomentosis. Folia petiolo 8–10 mm. longo tomentoso suffulta ; lamina 7–9 cm. longa, 3–5 cm. lata, ovato-lanceolata, apice acuta apiculata, basi rotundata paululo cordatula, in sicco papyracea, supra atroviridis ad costam setosula, ceterum glabra vel subglabra, infra ad costam nervosque longiuscule fulvido-setosula ; nervi nervulique supra impressi infra eminentes. Inflorescentiae axillares et terminales 2–16–florae. Pedunculi 1.5–2 cm. longi dense tomentosi ; bracteae lineari-lanceolatae vel subulatae 2-10 mm. longae tomentosae ; bracteolae ovatae pilosulae quartam ovarii partem aequantes. Calycis dentes vix 1 mm. longi triangulares ciliolati. Corolla ad 3.2 cm. longa flava extus appresse pilosula bilabiata ; tubus circ. 2 cm. longus basi 2 mm. latus supra vix ampliatus intus pilosulus ; labii superioris lobi circ. 3 mm. longi. Stamina corollam aequantia filamentis infra pilosulis. Stylus corollam aequans

ad medium vel ultro pilosus. Ovarium circ. 3 mm. longum glabrum.

"China :—Mingkwong Valley, Yunnan. Lat. 25° 20′ N. Alt. 7000–8000 ft. Semiscandent shrub of 6–12 ft. Flowers yellow, non-fragrant. On scrub. Oct. 1912." G. Forrest. No. 9273.

In appearance this species resembles the Manipur variety of *Lonicera ferruginea*, Rehder. With its pilose style and comparatively small flowers it should perhaps be placed in Rehder's subsection *Breviflorae*.

Lonicera oresbia, W. W. Sm. Sp. nov.

Species sectionis *Purpurascentium*, Rehder; a *L. obovata*, Royle bracteis minimis, bracteolis deficientibus recedit; a *L. serpyllifolia*, Rehder foliis glaberrimis, bracteis minoribus, corollis saccatis differt; a *L. aemulante*, Rehder foliis haud ciliatis, bracteis minoribus, stylo pilosulo divergit; *L. Farreri*, W. W. Sm. species aeque glaberrima bracteis longioribus, bracteolis minutis, corolla gracillima dignoscitur.

Fruticulus gracilis ramulis primo rubentibus glabris deinde cinerascentibus cortice fibroso. Folia decidua floribus fere coetanea petiolo 1.5–2 mm. longo glabro suffulta; lamina 7–15 mm. longa, 6–7 mm. lata, obovata, apice rotundata, basi cuneata, membranacea, utrinque glabra, supra viridis infra subglauca. Flores pedunculis 3–4 mm. longis glabris praediti; bracteae lanceolatae circ. 1 mm. longae glabrae ad medium ovarium attingentes; bracteolae nullae; ovaria ex toto connata, circ. 2 mm. longa, glabra, annulo calycino undulato circ. 1 mm. alto coronata. Corolla tubulosa 9–12 mm. longa extus glabra intus basi sparsim albo-villosa; tubus basi circ. 1.5 mm. latus gibbosus; lobi circ. 1 mm. longi subaequales. Stamina corollam paulo superantia supra medium tubum inserta filamentis glabris. Stylus staminibus paululo longior in parte inferiore albo-villosus.

China :—In the shrub and forest belt at 13,000–14,000 ft. Near Atuntsu, N.W. Yunnan. 1913. F. Kingdon Ward. No. 526.

Lonicera Standishii, Carr., var. **Monbeigii,** W. W. Sm. Var. nov.

A typo bracteis magnis ovaria longe superantibus corollam saepe subaequantibus, calycis ore truncato longiuscule setosulo-ciliato divergit.

China :—N.W. Yunnan. 1907. Père Monbeig. No. 135 in Herb. Edin.

The leaves of the specimens are immature; the bracts are very large and conspicuous. The plant may prove to be a distinct species.

1051 **Lonicera vestita**, W. W. Sm. Sp. nov.

Species affinis *L. acuminatae*, Wall. et *L. Giraldii*, Rehder; foliis parvis subtus dense incano-tomentosis, corollis circ. 1 cm. longis bene notata.

Frutex ad 3 m. altus ramulis primo densissime incano-tomentosis deinde glabrescentibus cinerascentibus. Folia (juniora floribus coaetanea tantum visa) petiolo circ. 2 mm. longo tomentoso suffulta; lamina 15–22 mm. longa, 8–12 mm. lata, plerumque late lanceolata, apice acuta apiculata, basi cuneata vel rotundata, chartacea, supra dense et appresse pilosula infra dense incano-tomentosa. Pedunculi 5–8 mm. longi albido-pilosi; bracteae subulatae 2–3 mm. longae pilosae; bracteolae truncatae ad duas partes ovarii pertinentes longiuscule ciliatae; flores bini axillares. Calycis dentes circ. 0.5 mm. longi deltoidei ciliati. Corolla bilabiata 1–1.1 cm. longa partim alba partim flava extus dense pilosula; tubus 4–5 mm. longus, circ. 2.5 mm. latus, basi gibbosus, intus pilosulus; lobi labii superioris oblongi 2 mm. paulo excedentes. Stamina corollam aequantia filamentis circ. 5 mm. longis ad medium vel ultro pilosulis antheris 2.5 mm. longis. Stylus circ. 1 cm. longus ex toto pilosulus. Ovarium circ. 2 mm. longum sparsim pilosulum vel subglabrum.

"China:—Tungchwan, Yunnan; alt. 2550 m.; grand arbuste buissonnant; haut 3 m.; fleurs mi-jaunes mi-blanches." Maire No. 779 (anno 1914) in Herb. Edin. Also Maire No. 518 (anno 1913) in Herb. Edin.

This small-flowered shrub belongs to the subsection *Brevi-florae*, Rehder in the vicinity of *L. Giraldii*, Rehder.

1052 **Lonicera virgultorum**, W. W. Sm. Sp. nov.

Species affinis *L. ligustrinae*, Wall. a qua foliis chartaceis conspicuo setoso-ciliatis supra haud lucidis, corollae tubo latiore limbum aequante inter alia recedit; a *L. pilcata*, Oliver corolla ad medium fissa facile dignoscenda.

Frutex 0.6–2.4 m. altus ramulis primo dense nigrido-pubescentibus deinde glabrescentibus cinerascentibus. Folia petiolo circ. 1 mm. longo pilosulo praedita; lamina 2–3.5 cm. longa, 1–1.5 cm. lata, lanceolata vel ovato-lanceolata, superne attenuata apice ipso obtusiuscula, basi plus minusve late cuneata, in sicco chartacea, margine longiuscule setoso-ciliata, supra opaca punctulis nigris conspersa ad costam setosula, infra

pallidior glabra, costa media setosula excepta. Pedicelli 2–3 mm. longi minute pubescentes; bracteae lineares circ. 2 mm. longae minute ciliatae; bracteolae glabrae in cupulam ovaria celantem connatae. Calycis dentes triangulares vix 1 mm. longi acuti ciliolati; pileus ovaria coronans. Corolla viridiflava 8–9 mm. longa extus sparsim puberula circ. ad medium fissa; tubus basi circ. 2 mm. latus, ore circ. 4 mm. latus, basi gibbosus; lobi oblongi apice obtusi. Stamina corollam aequantia vel paulo superantia filamentis glabris antheris circ. 2.5 mm. longis. Stylus paulo exsertus, ad duas partes inferiores pilosus. Fructus maturus ruber seminibus circ. 6 complanatis 3 mm. longis 2 mm. latis.

"China :—Pu-Yungchang divide, Yunnan. Lat. 25° 10′ N. Alt. 7000 ft. Shrub of 4–6 ft. Flowers greenish-yellow. Open situations amongst scrub. May 1913." G. Forrest. No. 9880.

"Hills to the east of Tengyueh, Yunnan. Lat. 25° N. Alt. 6000 ft. Shrub of 2–4 ft. Amongst scrub. May 1912." G. Forrest. No. 7779.

"Flanks of the Mingkwong Valley, Yunnan. Lat. 25° N. Alt. 7000 ft. Shrub of 6–8 ft. In fruit, fruit scarlet. Open situations amongst scrub. May 1913." G. Forrest. No. 7905.

In appearance this species resembles *L. pileata*, Oliver, var. *yunnanensis*, Franch.; it is more closely allied to *L. ligustrina*, Wall. in the flower structure.

1053 **Lonicera Wardii**, W. W. Sm.

Species affinis *L. nervosae*, Maxim. et *L. lanceolatae*, Wall.; ab ambabus gibbo corollino dense et longiuscule setosulo inter alia differt.

Frutex ramulis hornotinis albido-pilosis atque puberulis, vetustioribus glabrescentibus cortice fibroso cinerascentibus. Gemmae oblongae pallide brunneae perulis acuminatis plus minusve persistentibus. Folia petiolo 3–4 mm. longo suffulta; lamina 4–6 cm. longa, 2.5–3 cm. lata, ovato-lanceolata vel ovata, apice acuta vel subacuta breviter apiculata, basi rotundata, margine undulata, in sicco membranacea, supra laete viridis subglabra nisi ad costam sulcatam dense pilosam, nervis nervulisque bene reticulatis conspicuis albidis, infra pallidior sparsim pilosa, ad costam dense pilosa. Pedunculi in axillis superioribus orientes 1–1.2 cm. longi pilosi; bracteae subulatae, ciliatae, vix 1 mm. superantes; bracteolae rotundatae in cupulam fere ad basim 4-partitam connatae vel subliberae ovarii dimidium aequantes ciliatae. Calycis dentes lineari-lanceolati circ. 1 mm. longi ciliati purpurascentes. Corolla 1.3–1.4 cm. longa, bilabiata, in sicco purpurea, extus sparsim

pilosula, gibbo dense et longiuscule setosulo, limbo 9 mm. longo quam tubus duplo longiore, labio superiore breviter 4-lobato lobis ovatis, tubo intus basi pilosulo. Stamina limbum fere aequantia filamentis glabris antheris oblongis circ. 3 mm. longis. Stylus staminibus paulo brevior pilosulus. Ovaria glabra circ. 2 mm. longa. Fructus deest.

"China :—At Atuntsu on the borders of Yunnan and Tibet, in rain-forest undergrowth, 10,000–12,000 ft. June 1913." F. Kingdon Ward. No. 558.

Lychnis bhutanica, W. W. Sm. Sp. nov.

Species ex affinitate *L. indicae,* Benth. et *L. nutantis,* Benth. sed caule glanduloso-piloso, foliis carnosulis dense glanduloso-pilosis, inflorescentiis glandulosis inter alia longe differt.

Planta circ. 30 cm. alta. Caulis ramosus infra pilis purpureis dense indutus, supra minus dense. Folia radicalia obovata vel late spathulata, ± 12 cm. longa, ± 4 cm. lata, apice subacuta, basi in petiolum latum cuneata, carnosula, undique ± glanduloso-pilosa ; folia caulina ovata ± 7 cm. longa, ± 3.5 cm. lata, sessilia, acuta, basi ipsa dense purpureo-pilosa, caeterum radicalibus subsimilia. Panicula laxa 10–20-flora ; pedunculi ad 3 cm. longi densissime glanduloso-pilosi ; pedicelli breves bracteis parvis praediti. Calyx circ. 1.8 cm. longus, multo inflatus, pallido-viridis jugis 10 longitudinalibus dense nigro-pilosis pererratus intus glaber ; dentes 5 triangulares circ. 5 mm. longi dense ciliati, dorso pilis nigris glandulosis hirsuti. Carpophorum 5 mm. longum dense albo-villosum. Petala circ. 1.7 cm. longa infra carpophoro adhaerentia ejusque ope paulo calycem superantia ; unguis oblanceolata apice late alata viridi-albida purpureo-striata ; lamina purpurea 3–4-fida, segmentis duobus plerumque aliis majoribus. Stamina 10 filamentis basi ipsa albo-villosis 1.3 cm. longis, antheris 2 mm. longis. Styli 5 ovarium 7–8 mm. longum subaequantes. Fructus circ. 1.5 cm. longus laevis nitenti-olivaceus dentibus 5 integris vel bifidis ; semina circ. 1 mm. longa, reniformia, tuberculata, brunnea.

"Bhutan :—Parshong, Timpu. Alt. 12,000 ft. In peat meadow. September 1914." R. E. Cooper. No. 2952. (Fruiting specimen.)

Flowering specimen in Herb. Edin. cult. Bees, Ltd., from seeds of No. 2952.

"Parshong, Timpu. Alt. 12,000 ft. July 1914." R. E. Cooper. No. 1878. (Flowering specimen.)

Meliosma Forrestii, W. W. Sm. Sp. nov.

Species affinis *M. dilleniacfoliae,* Blume a qua foliis coriaceis inter alia signa abunde differt.

Frutex vel arbor 6–12 m. alta ramulis dense fulvo-tomentellis; gemmae tomentosae. Folia alterna petiolo 2–4 cm. longo dense fulvo-tomentello praedita; lamina 18–35 cm. longa, 7–16 cm. lata, plus minusve elliptica, subabrupte et breviter acuminata, basi cuneata, margine subspinuloso-serrata, coriacea, supra glabra nisi ad costam nervosque fulvo-tomentellos, infra ad costam dense tomentella, ad nervos nervulosque fulvo-pilosula, nervis primariis utrinsecus 16–20 parallelis supra impressis infra eminentibus ad serraturas excurrentibus. Paniculae (submaturae) terminales, pyramidales, 25 cm. longae vel ultro tomento denso fulvo obtectae. Florum alabastra sessilia basi dense fulvo-pilosula. Sepala 5, suborbicularia, 1 mm. paulo excedentia margine ciliata. Petala suborbicularia glabra. Fructus deest.

"China :—Ma-chang-kai Valley, Yunnan. Lat. 25° 20′ N. Alt. 7000 ft. Shrub or tree of 20–40 ft. Flowers (immature) creamy yellow. In open forests. July 1913." G. Forrest. No. 11,744.

Myricaria rosea, W. W. Sm. Sp. nov.

Species habitu laxo, foliis longiusculis vix imbricatis, bracteis praelongis flores apertos superantibus inter alia cognoscenda; ex affinitate *M. prostratae,* Hook. f. et Thoms.

Suffrutex decumbens circ. 1 m. altus, ramis striatis ramulisque primo glauco-viridibus. Folia 5–15 mm. longa, 1–2 mm. lata, lineari-lanceolata, saepe falcata, sessilia, laxiuscule approximata. Inflorescentiae 4–8 cm. longae spiciformes ramulo florifero bracteis foliaceis lineari-lanceolatis 1.5–2 cm. longis crebre ornato; bracteae superiores sterilibus subsimiles paulo minores flores longiuscule superantes. Pedicelli 2–3 mm. longi. Sepala libera lineari-lanceolata 5–6 mm. longa. Petala anguste obovata 5–7 mm. longa rosea. Stamina 10 ad medium connata. Fructus deest.

"China :—Mountains in the N.E. of the Yangtze bend, Yunnan. Lat. 27° 45′ N. Alt. 10,000 ft. Shrub of 2–4 ft. Flowers rose. Open situations amongst scrub. June 1913." G. Forrest. No. 10,609.

"Near Atuntsu, Yunnan, 11,000–13,000 ft. on screes; low-growing, spreading shrub 1–2 ft. high on granite rocks by streams. June 1913." F. Kingdon Ward. No. 562.

6811

Neillia villosa, W. W. Sm. Sp. nov.

Species affinis *N. sinensi*, Oliver; foliis ad 12 cm. longis subtus dense hirsuto-villosis inter alia bene notata.

Frutex; rami hornotini teretes flexuosi dense fulvo- vel subferrugineo-tomentosi. Folia petiolo circ. 5 mm. longo dense tomentoso suffulta; lamina plerumque 8–12 cm. longa, 4–6.5 cm. lata, ambitu ovata, saepe ad tertiam vel quartam partem lobata, lobis utrinque vulgo 3–4, apice in caudam longam lamina vix breviorem ex toto serratam attenuata, basi plus minusve rotundata, margine serrata, in sicco papyracea, supra nunc densiuscule et longiuscule pilosa, nunc sparsius, pilis ex tuberculis minimis ortis, infra dense fulvo- vel subferrugineo-hirsuto-villosa; nervi utrinque 5–6 paria; stipulae 7–9 mm. longae, ovatae vel cordiformes, subintegrae sparsim pilosae. Racemi circ. 3.5 cm. longi, pedunculo circ. 1 cm. longo tomentoso suffulti, terminales, simplices, 8–12-flori; bracteae ad 1 cm. longae lineari-lanceolatae vel sublineares, dense pilosae; pedicelli 2–3 mm. longi, ut rhachis longiuscule pilosi. Calycis tubus anguste cylindricus circ. 8 mm. longus extus sparsim pilosulus intus dense villosulus, lobi circ. 5 mm. longi lanceolati subito longe acuminati utrinque villosuli; petala nulla, saltem nulla visa; stamina circ. 15; ovarium circ. 3 mm. longum villosulum in stylum 7–8 mm. longum supra glabrum infra villosulum abiens. Fructus deest.

China :—Neighbourhood of Yunnanfu, Yunnan. Maire. No. 2330 in Herb. Edin. coll. circ. anno 1906.

14156

Nothopanax membranifolius, W. W. Sm. Sp. nov.

Species inter affines chinenses foliis simplicibus haud lobatis minute denticulatis in sicco tenuiter membranaceis bene notata.

Frutex 2–6 m. altus ramis gracilibus glabris vel mox glabrescentibus brunneis. Folia simplicia petiolo 5–10 cm. longo gracili glabro nisi ad insertionem pilosulam suffulta; lamina 8–17 cm. longa, 3–6.5 cm. lata, anguste elliptica vel lanceolato-elliptica, apice ad 3 cm. subabrupte caudato-acuminata, basi plus minusve rotundata, margine denticulis induratis regulariter praedita, in sicco membranacea, utrinque glabra, supra opaco-viridis, subtus pallidior subolivacea, reticulo nervulorum utrinque bene conspicuo. Paniculae ad 8 cm. longae foliis plerumque breviores ramis brevibus glabris vel minute sparsimque stellato-puberulis; pedicelli 6–8 mm. longi. Calycis dentes brevissimi acutiusculi; petala 1.5–2 mm. longa, triangularia; stamina 5; ovarium obconicum circ. 2 mm. longum, sparsim stellato-puberulum biloculare; styli 2, liberi vel basi paululo connati.

"China :—Hills to the south of Tengyueh, Yunnan. Lat.

25° N. Alt. 6000–7000 ft. Shrub of 6–9 ft. Flowers green. Amongst scrub and in thickets. June 1912." G. Forrest. No. 8086.

"Outskirts of lava-bed to west of Tengyueh. Lat. 25° N. Alt. 5000 ft. Tree or shrub of 10–20 ft. Flowers green. May 1912." G. Forrest. No. 7704.

5218 **Osbeckia Mairei,** Craib. Sp. nov.

Species nova ab affini *O. septemnervia,* Ham. Mss. floribus minoribus distinguenda.

Ramuli patenter densius hirsuti. Folia opposita vel ternata, oblonga vel oblongo-lanceolata, apice longius acute attenuata, basi late cuneata vel rotundato-cuneata, 8.5–11.5 cm. longa, 2–3.3 cm. lata, chartacea, pagina superiore setis satis longis plus minusve adpressis sparsis hirsuta, inferiore pallidiora, densius, praesertim ad nervos, hirsuta, 7-nervia, nervis usque ad basem vel fere ad basem inter se omnino liberis pagina superiore parum immersis inferiore prominentibus, nervis transversis numerosis inter se parallelis fere semper integris haud ramosis supra subobscuris subtus prominulis, margine ciliata, obscurius minute denticulata, petiolo circa 3 mm. longo suffulta. Paniculae terminales et axillares et ramulos breves laterales terminantes, densius hirsutae, pedunculo communi usque ad 4 cm. longo suffultae ; pedunculi ultimi circa 1 cm. longi ; pedicelli subnulli ; bracteae cito deciduae, dorso pauci-setosae, setoso-ciliatae. Receptaculum 8 mm. altum, extra sublaxius hirsutum, appendiculis apice setosis haud glanduloso-capitatis. Calycis tubus 1 mm. longus, segmenta lanceolata vel lineari-lanceolata, apice longe attenuato-acuminata, acuta, 10 mm. longa, 2 mm. lata, extra medio sparse setosa, intra glabra, setoso-ciliata, appendiculis setiferis haud glanduloso-capitatis alternantia. Petala rubra (ex Maire), obovata vel subelliptica, apice rotundata, basi in unguem brevem latum plus minusve distinctum angustata vel attenuata, 2 cm. longa, 1.3 cm. lata, ciliata. Antherae filamentis aequilongae, 13 mm. longae, basi haud setosae. Ovarium 7 mm. altum (apice conico hirsuto incluso), stylo 2.5 cm. longo.

China :—Tchouan-se-pa, N.E. Yunnan, 690 m. E. E. Maire.

5215 **Osbeckia robusta,** Craib. Sp. nov.

Species ab *O. yunnanense,* Franchet Mss. antheris basi paucisetosis recedit.

Caules 2–3 pedales (ex Forrest), fistulosi, dense patule pallide ferrugineo-hirsuti, satis robusti, basi circiter 6 mm. diametro. Folia oblongo-ovata vel ovata, apice saepe subacuminata, summo apice obtusa vel acuta, rotundata vel rotundato-cuneata,

rarius acuminata, usque ad 8 cm. longa et 4 cm. lata, chartacea, pagina utraque setis plus minusve adpressis hirsuta, superiore sparse, inferiore densius hirsuta, inferiore pallidiora, lutescentia, 7-nervia, nervis inter se ad imam basem liberis supra impressis subtus prominentibus, nervis transversis saepe ramosis satis numerosis subtus prominulis supra subconspicuis parum immersis, margine integra, conspicue ciliata, petiolo 4–5 mm. longo ut caule hirsuto suffulta. Inflorescentia et axillaris et terminalis, densa, capituliformis, pedunculo communi usque ad 2.5 cm. longo indumento ei caulium simili tecto suffulta; bracteae ovatae, acuminatae, ad 1 cm. longae, extra adpresse hirsutae, intra glabrae, longius ciliatae; pedicelli subnulli. Receptaculum 1 cm. longum, extra densius hirsutum, appendiculis apice haud glanduloso-capitatis. Calycis tubus circa 0.5 mm. longus, segmenta 4, lineari-oblonga, acute longius acuminata, 7–8 mm. longa, 2–2.25 mm. lata, dorso margineque longe subsparse setosa, intra glabra. Petala 4, suborbicularia vel rhomboideo-orbicularia, 2.2 cm. longa, 2.1–2.3 cm. lata, ciliata. Antherae 12 mm. longae, basi paucisetosae, filamentis 15 mm. longis suffultae. Ovarium cum apice conico hirsuto 6 mm. longum, stylo 25 mm. longo inferne parce hirsuto.

China :—Yunnan, hills to the west of Tengyueh, on open scrubby hillsides, 6000–65000 ft.; plant of 2–3 ft.; flowers bright rose. G. Forrest. No. 8561.

Osbeckia septemnervia, Ham. Mss. in Herb. Edin. ex Craib. Sp. nov.

Species nova ab *O. crinita,* Benth. floribus multo majoribus recedit.

Ramuli quadrangulares, pallide patule densius et longius hirsuti. Folia opposita, lanceolata vel oblongo-lanceolata, superne longe gradatim attenuata, summo apice acuta, basi cuneata rotundatave, 7.5–12.5 cm. longa, 2–3.2 cm. lata, chartacea, pagina superiore setis rigidis pallidis adpressis subsparsis hirsuta, inferiore pallidiora, ad nervos longius setosa, praetereaque pilis brevibus albis adpressis sparse tecta, e basi 7-nervia, nervis supra impressis subtus prominentibus, nervis transversis supra obscuris vel subobscuris subtus prominulis, margine integra, petiolo 7–12 mm. longo densius setoso suffulta. Cymae et axillares, subsessiles vel pedunculo foliis dimidio breviore suffultae et in paniculam terminalem ramis oppositis ad 6 cm. longis dispositae, pedunculis primariis et secundariis cum rhachi setis ut ramulis tectis; cymae utriusque flores congesti, sessiles vel subsessiles; bracteae subrotundatae vel ovatae, apice saepissime acuminatae, 6–9 mm. longae, dorso adpresse setosae, intra glabrae, margine longe setoso-ciliatae. Recepta-

culum 12 mm. altum, extra appendiculis pallide longe setosis apice haud glanduloso-capitatis subdense hirsutum praetereaque pilis brevibus adpressis albis persistentibus sparse instructum. Calycis tubus fere 1.5 mm. longus, segmenta 4, lineari-lanceolata, apice longe attenuato-acuminata vel subacuminata, 14–15 mm. longa, 2.25–3 mm. lata, dorso sparse longe setosa et pilis albis brevibus adpressis instructa, margine setoso-ciliata, appendiculis setiferis usque ad 9 mm. longis haud glanduloso-capitatis alternantia. Petala 4, obovata vel fere orbiculari-obovata, plus minusve distincte breviter unguiculata, ungui incluso ad 2.7 cm. longa, circa 2 cm. lata, ciliata. Stamina ad 2.8 cm. longa, antheris quam filamenta paulo longioribus. Ovarium ambitu anguste oblongum, apice conico setoso incluso circa 6.5 mm. longum ; stylus vix 3 cm. longus.

Himalaya :—Gualpara. Hamilton. No. 916.

Osbeckia sikkimensis, Craib. Sp. nov.

Species nova ab affini *O. Wattii,* Craib foliorum nervis ad basem haud liberis, ramulis sparse hirsutis, petalis apice breviter acuminatis distinguenda.

Ramuli fistulosi, pilis albis rigidis basi tumidis divergentibus primo dense mox laxius hirsuti. Folia oblonga vel oblongo-lanceolata, apice longius attenuata vel attenuato-subacuminata, summo apice acuta, basi cuneata lateve cuneata, 7–16 cm. longa, 2.3–5.3 cm. lata, chartaceo-membranacea vel membranacea, pagina superiore conspicue sed sparsius longe plus minusve adpresse albo-setosa, inferiore pallidiora, tantum ad nervos nervosque transversos sparse setosa, 7-nervia, nervis duobus lateralibus costae proxime basi distincte connatis, omnibus supra impressis subtus prominentibus, nervis transversis sat numerosis supra obscuris vel haud rarius subconspicuis et parum immersis subtus prominulis, margine longius ciliata, petiolo 1–2 cm. longo dense setuloso-hirsuto suffulta. Flores sessiles ; bracteae ovatae longius acuminatae, 6–7 mm. longae, 4 mm. latae, dorso margineque setis satis longis basi tumidis albis instructae ; bracteolae lanceolatae, circa 5 mm. longae, indumento ut bracteae instructae. Receptaculum 11 mm. altum, extra appendiculis setosis saltem nonnullis apice glandula capitata stipitata instructis densius tectum. Calycis segmenta 7–8 mm. longa, 1–2 mm. lata, apice longius attenuata, dorso margineque setulis albis basi tumidis parce ornata, appendiculis inferne setosis superne nudis summo apice glanduloso-capitatis alternantia. Petala 4, obovata vel orbiculari-obovata, apice breviter acute acuminata, 12–15 mm. longa, 11 mm. lata, glabra vel apice pauperrime ciliata. Antherae 14 mm. longae, filamentis 11 mm. longis suffultae. Ovarium 6.5 mm. altum, apice conicum,

setosum, summo apice truncatum, stylo 17 mm. longo.—*O. crinita*, C. B. Clarke in Hook. f., Fl. Brit. Ind., ii, p. 517, pro parte; ? Lacaita in Journ. Linn. Soc., xliii, p. 468, non Benth.

Himalaya :—Sikkim, Ribu et Rhomoo (25.10.11); Darjeeling, Herb. R.E.P., No. 21,252; Yoksun, 5800 ft. C. B. Clarke. No. 25,207B.

Osbeckia Wattii, Craib. Sp. nov.

Species ab *O. paludosa*, Craib, antheris basi haud setosis, foliis supra sparse setosis cognoscenda.

Ramuli primo setis longiusculis divergentibus dense tecti, demum plus minusve glabrescentes, robusti. Folia oblonga, apice acute acuminata, usque ad 14 cm. longa et 5.4 cm. lata, chartacea, pagina superiore setis longis conspicue sed sparsius instructa, inferiore ad nervos dense setosa et ad nervos transversos sparsius setosa, e basi 7-nervia nervis inter se ad imam basem liberis pagina superiore parum impressis inferiore prominentibus, nervis transversis inter se parallelis supra subobscuris parum immersis subtus prominulis, margine obscure serrulata, ciliata, petiolo sat robusto circiter 1 cm. longo indumento ut ramulis obtecto suffulta. Paniculae terminales, dense hirsutae, floribus sessilibus congestis; bracteae 3–4 mm. longae, 5 mm. latae, apice rotundatae vel brevius acuminatae, hirsuto-ciliatae, extra superne plurisetosae, intra glabrae. Receptaculum 8–9 mm. altum, extra appendiculis setosis omnibus vel saltem plerisque apice glandulosis haud setosis obtectum. Calycis tubus circa 0.75 mm. longus, segmenta 4, oblanceolata, apice longius attenuato-acuminata, 8 mm. longa, fere 2.5 mm. lata, dorso margineque setosa, intra glabra, appendiculis setosis apice glandulosis alternantia. Petala 4, obovata, apice rotundata, basi in unguem latum plerumque vix distinctum angustata, 17 mm. longa, 13–14 mm. lata, apice pauperius ciliolata. Antherae 12.5 mm. longae, filamentis aequilongae. Ovarium 5 mm. altum, apice setosum, stylo 2 cm. longo.

India :—Naga Hills, Kohima. 5000 ft. G. Watt. No. 7280.

Osbeckia yunnanensis, Franchet Mss. ex Craib. Sp. nov.

Species ab *O. crinita*, Benth. cui affinis, partibus omnibus multo majoribus recedit.

Caules stricti, erecti, 30–56 cm. alti, simplices vel rarius parce ramosi, obscure quadrangulares, mox fere teretes, fistulosi, lutescentes, subsparse patenter hirsuti. Folia ovata vel anguste ovata, apice acuta vel obtusa, vix acuminata, basi rotundata vel cuneato-rotundata, 3.5–5.5 cm. longa, 1.5–3 cm. lata,

chartacea vel chartaceo-coriacea, pagina superiore longe sparse sed conspicue setosa, inferiore ad costam nervos nervulosque sparse setosa, subtus lutescentia, 7-nervia, nervis usque ad basem inter se liberis supra parum immersis subtus prominentibus, nervis transversis plus minusve laxe reticulatis subtus prominulis, petiolo usque ad 3 mm. longo sed plerumque breviore et haud rarius subnullo suffulta. Flores in paniculas terminales angustas dispositi et etiam axillares et rarius ramulos breves laterales terminantes; pedunculi communes 1–2 cm. longi, indumento ut caules tecti; pedicelli perbreves; bracteae deciduae dorso sparse setosae, ciliatae. Receptaculum 14 mm. longum, extra appendiculis longe setosis sed haud glanduloso-capitatis laxius instructum. Calycis tubus 1 mm. longus, segmenta 7–9 mm. longa, inferne 1.5 mm. lata, dorso margineque longe sparse setosa, appendiculis setiferis ad 4 mm. longis alternantia. Petala 4, obovata vel orbiculari-obovata, apice rotundata vel subtruncata, brevissime acuminata vel sinuata, 22 mm. longa, 18–20 mm. lata, ciliata. Stamina 8; antherae 18 mm. longae, basi haud setosae, filamentis 14 mm. longis suffultae. Ovarium cum apice conico setoso 9 mm. longum, stylo 23–24 mm. longo glabro vel setulis perpaucis inferne instructo.—*O. crinita*, Benth., var. *yunnanensis*, Cogn. in DC. Mon. Phan., vii, p. 324.

China :—Yunnan, dry stony pasture, eastern flank of Tali Range, 6500–8000 ft. Flowers bright magenta-rose. G. Forrest. No. 7140; Ibid. Flowers bright purplish-rose. G. Forrest. No. 4395.

Yunnan, loco haud indicato, Delavay.

Pentapanax Forrestii, W. W. Sm. Sp. nov.

Species ex affinitate *P. verticillati*, Dunn a quo ex descriptione foliolis multo majoribus membranaceis subtus haud glaucis inter alia differt.

Frutex 6 m. altus ramulis inermibus glabris. Folia petiolo ad 20 cm. longo ad vaginam pilosulo ceterum glabro suffulta, 3-foliolata; petioluli laterales brevissimi 1–2 mm. longi, terminalis longissimus ad 8 cm., ad insertionem inferiorem rufo-tomentello-pulvinati; lamina ad 15 cm. longa, ad 7 cm. lata, oblonga vel ovato-oblonga, apice abrupte atque breviter acuminata, basi rotundata, margine integra, siccando membranacea, supra viridis glabra infra paulo pallidior glabra nisi ad insertionem petioluli saepe rufo-tomentella; nervi nervulique utrinque conspicui bene reticulati. Inflorescentiae quoad formam et magnitudinem eis *P. Leschenaultii* similes; paniculae circ. 12, umbellulis 3–4 plerumque praeditae; pedunculi circ. 5 cm. longi, secundarii circ. 2 cm., subdense rufo-pilosuli; pedicelli 5–8 mm. longi articulati glabri. Calycis margo brevissimus

glaber lobulis obtusis. Petala circ. 1.5 mm. longa triangularia leviter imbricata glabra. Stamina 5; discus late conicus; styli ad apicem connati; ovarium 5-loculare. Fructus maturus deest.

"China :—Kari pass, Mekong-Yangtze divide, Yunnan. Lat. 27° 40′ N. Alt. 10,000 ft. Shrub of 20 ft. Flowers olive-yellow. In open thickets. July 1914." G. Forrest. No. 12,941.

6963 **Photinia flavidiflora,** W. W. Sm. Sp. nov.

Species certe valde affinis *P. integrifoliae,* Lindl. et *P. Notonianae,* Wight et Arn. a quibus floribus duplo majoribus recognoscitur.

Frutex 2–6 m. altus; ramuli hornotini crassi glabri, annotini atro-brunnei, seniores tandem cinerei decorticantes. Folia persistentia, valde coriacea, petiolo 2–4 cm. longo valido corrugato glabro suffulta; lamina 13–23 cm. longa, 6–9 cm. lata, oblanceolata vel elliptica, apice breviter acuminata vel interdum rotundata, basi rotundata vel late cuneata, integerrima, supra pallido-viridis, opaca, glabra, subtus paululo pallidior glabra; costa media supra impressa, infra multo eminens, nervis numerosis ad marginem vix pertinentibus cum nervulis reticulum conspicuum utrinque in sicco exhibentibus. Corymbus terminalis ad 12 cm. longus, ad 12 cm. latus, multiflorus, ramosus; rhachis ramulique validi primum pilis albidis subdense hispiduli mox glabrescentes; pedicelli 2–4 mm. longi, sparsim pilosuli; bracteae minutae caducae. Flores 8–10 mm. diametro lacteo-flavidi; calycis tubus late cupularis circ. 2.5 mm. longus glaber vel sparsim furfuraceus, lobi brevissimi ovati obtusi glabri. Petala 3–3.5 mm. longa, obovata vel suborbicularia, apice rotundata, glabra. Stamina 20 filamentis 4 mm. longis corollam superantibus. Ovarium biloculare apice dense albido-villosulum; styli 2 subliberi vel ad medium connati staminibus duplo breviores stigmate complanato capitato. Fructus vix maturus subglobosus circ. 4 mm. diametro, glaber nisi ad apicem, calycis dentibus persistentibus erectiusculis.

"China :—Mingkwong Valley, Yunnan. Lat. 25° 20′ N. Alt. 7000 ft. Shrub of 15–20 ft. Flowers creamy-yellow. Open situations in thickets. Nov. 1912." G. Forrest. No. 9221.

"Hills to the N.W. of Tengyueh, Yunnan. Lat. 25° 10′ N. Alt. 8000 ft. Shrub of 12–20 ft. Flowers creamy-yellow, anthers violet. Open situations in thickets. Nov. 1912." G. Forrest. No. 9294.

"Divide between the Tengyueh and Shweli Valleys. Lat. 25° N. Alt. 7000 ft. Shrub of 6–15 ft. In fruit. In thickets. May 1912." G. Forrest. No. 7901.

"Hills to the N.W. of Tengyueh. Lat. 25° 10′ N. Alt. 7000 ft. Shrub of 12–20 ft. In fruit. Amongst scrub. June 1912." G. Forrest. No. 8079.

I have compared this species with numerous Himalayan and Neilgherry specimens of *P. integrifolia*, Lindl. and *P. Notoniana*, Wight and Arn.; it differs chiefly in the much larger flowers; the stamens are four times as long.

Photinia loriformis, W. W. Sm. Sp. nov.

Species affinis *P. argutae*, Lindl. et *P. salicifoliae*, Dcne. sed foliis lineari-oblongis vel loriformibus remotiuscule subspinoso-serratis inter alia abunde discrepat.

Frutex vel arbor parva; altitudo non nota; ramuli hornotini tomento denso adpresso fulvido induti, annotini glabrescentes, deinde cinerei vel cinereo-brunnei. Folia persistentia coriacea petiolo 3–12 mm. longo primum dense fulvido-tomentello tandem glabro suffulta; lamina variabilis, nunc lineari-oblonga vel anguste lanceolata, 6–9 cm. longa, 1–2 cm. lata, nunc loriformis, ad 10 cm. longa, circ. 5 mm. lata, apice nunc rotundata mucronata, nunc acutata spinoso-mucronata, basi late cuneata, margine in sicco paululo revoluta remotiuscule et argute serrata vel spinoso-serrata, supra lucida glabra, infra tomento denso cinereo vel fulvido persistente (tantum in senectute delabente) induta; costa media nervique 10–20 paria supra impressi infra prominuli. Corymbi terminales multiflori 2–4 cm. lati densiflori; ramuli cum pedicellis 1–3 mm. longis dense vel laxiuscule fulvido-tomentelli; fructiferi glabrescentes; bracteae bracteolaeque lineares caducae. Calycis tubus turbinatus fere 2 mm. longus dense albido-tomentellus, lobi circ. 1 mm. longi, ovati, apice rotundati, margine saepe nigro-glandulosi, extra tomentelli, intus glabri. Petala circ. 3 mm. diametro orbicularia brevissime unguiculata glabra. Stamina 20 petalis multo breviora. Ovarium biloculare apice dense albo-villosum; styli 2 liberi basi villosi circ. 1.5 mm. longi; stigma subcapitatum. Fructus ovoideus circ. 5 mm. longus, 3.5 mm. latus, ruber, sparsim pilosulus calycis dentibus incurvis coronatus; semina 2–4, rubro-brunnea, 2–3 mm. longa.

"China:—Vicinity of Yunnanfu, Yunnan." Maire in Herb. Edin. Nos. 1118, 1117, 1755, 2099.

The narrow-leaved forms of this species are very remarkable.

Photinia sambuciflora, W. W. Sm. Sp. nov.

Species affinis *P. integrifoliae*, Lindl. a qua foliis deciduis in sicco tenuiter papyraceis vel submembranaceis inter alia differt.

Frutex 6–10.5 m. altus; ramuli hornotini crassi angulati glabri, annotini brunnei. Folia decidua tenuiter papyracea vel submembranacea petiolo 1–4 cm. longo glabro suffulta; lamina 8–18 cm. longa, 4–7 cm. lata, anguste elliptica vel oblanceolata, apice plerumque breviter acuminata, basi late cuneata vel subrotundata, integerrima, supra laete viridis lucida, infra subolivacea opaca, utrinque glabra; costa media supra impressa, subtus valde eminens, nervis utrinque 10–20 paribus ad marginem vix pertinentibus cum nervulis reticulum supra obscurum infra in sicco manifestum exhibentibus. Corymbus terminalis ad 15 cm. altus, ad 24 cm. latus, multiflorus; rhachis ramulique multoties divisi glabri; pedicelli ad 4 mm. longi glabri; bracteae lineari-oblongae 2–3 mm. longae; bracteolae minutae rubidae. Flores vix 5 mm. diametro lacteo-flavidi; calycis tubus turbinatus circ. 1 mm. longus glaber, lobi brevissimi ovati. Petala 2–2.5 mm. longa, late elliptica vel orbicularia, glabra. Stamina 20 petalis paulo breviora. Ovarium biloculare apice dense albido-villosulum; styli duo subliberi staminibus breviores stigmate capitato. Fructus deest.

"China :—Hills to the north of Tengyueh, Yunnan. Lat. 25° 20′ N. Alt. 6000–7000 ft. Shrub of 20–35 ft. Flowers creamy-yellow, fragrant. Open thickets. March 1913." G. Forrest. No. 9722.

"Shweli-Salween divide, Yunnan. Lat. 25° 10′ N. Alt. 8000–9000 ft. Shrub of 20–30 ft. Flowers pale creamy-yellow. In open thickets. April 1914." G. Forrest. No. 12,293.

Pyrus (Sorbus) Harrowianus, Balf. f. et W. W. Sm. Sp. nov.

Inter species chinenses affinis *Sorbo Sargentianae,* Koehne quae foliolis acuminatis multo minoribus plus minusve lanatis inter alia differt; a *Pyro insigni,* Hook. f. specie himalayensi haud remota; foliolis 20 cm. saepe excedentibus primo intuitu recognoscenda.

Arbor 8–13 m. alta; rami crassi (in scheda 5–7 mm. diametro) atropurpurei nitidi glabri vel glabrescentes lenticellis elongatis albidis bene notati; rami juniores in spec. cultis prima aetate rufido-villosi deinde plus minusve cinerascentes; gemmae magnae 1.5–2 cm. longae acutae glabrae vel sparsim rufido-villosulae; stipulae herbaceae magnae plerumque 1–2 cm. longae apice in auriculas acutas productae persistentes. Folia variabilia in spec. juvenilibus cultis plerumque trifoliolata deinde 3–9-foliolata; folia in typo cum petiolo 2–3 cm. longo ad 24 cm. longa, plerumque 2–3-juga; rhachis exalata plerumque glabra purpurascens interstitiis circ. 2 cm. longis; foliola coriacea aequalia vel subaequalia anguste oblonga,

majora 17–21 cm. longa, 4–5 cm. lata, basi asymmetrica, rotundata vel late cuneata, apice rotundata, margine serrulata dentibus utrinque circ. 40–50, paululo revoluta (ideoque serraturae saepe obscurae), supra glabra plus minusve nitida, infra glabra plus minusve glauca, costa impressa subtus multo elevata, nervis utrinque circ. 30, reticulo supra paulo obscuro infra conspicuo; foliola in spec. juvenilibus plana marginibus haud revolutis serraturis conspicuis. Inflorescentia circ. 12 cm. longa, circ. 15 cm. lata, convexa, plus minusve densa, sub fructu sparsim longiuscule albo-villosa. Flores non visi. Sepala circ. 1.5 mm. longa triangularia rubrida. Carpidia plerumque tria. Fructus vix maturus ovoideo-globosus apice truncatulus circ. 5 mm. longus circ. 4 mm. latus.

"China :—Tree of 25–40 ft. In fruit. In thickets on the western flank of the Shweli-Salween divide, Yunnan. Lat. 25° 20′ N. Alt. 9000 ft. Aug. 1912." G. Forrest. No. 9040.

This is a very remarkable species. At maturity it is conspicuous by the large size of the leaflets which often exceed 8 inches in length, by the small number of the pairs of leaflets and by their stout coriaceous texture. In the young plants observed in cultivation in the Royal Botanic Garden the leaves are generally trifoliate, with a shining upper surface and distinct serration; in plants of a foot high trifoliate leaves are found along with leaves showing 2–4 pairs of leaflets. Among the Chinese species of *Pyrus* of the section *Sorbus* the species most akin appears to be *S. Sargentiana*, Koehne; the leaflets, however, in that species are decidedly small, have a long acuminate apex, a much thinner texture, and a more or less deciduous covering of wool especially on the under surface. Another close ally is *P. insignis*, Hook. f. from the East Himalaya, which has smaller more numerous leaflets and is much less glabrous. The specific name is in honour of Mr. Robert Lewis Harrow, Head Gardener of the Royal Botanic Garden since 1902.

Rhamnella Forrestii, W. W. Sm. Sp. nov.

Species valde affinis *Rhamnellae Martinii*, Schneider a qua foliis tenuioribus, nervis paucioribus magis distantibus angulo majore a costa ad marginem decurrentibus inter alia signa divergit; a *R. Mairei*, Schneider inflorescentiis 1–2-floris differt; a *R. Julianae*, Schneider foliis glaberrimis recognoscitur.

Frutex 2–3 m. altus; ramuli graciles glabri cinerei. Folia petiolo circ. 5 mm. longo suffulta; stipulae eas *Rhamnellae Martinii* simulantes; lamina in sicco tenuiter membranacea, 4–7.5 cm. longa, 2–3 cm. lata, oblongo-lanceolata, apice gradatim acuminata, basi rotundata vel late cuneata, margine serru-

lata nisi ad partem tertiam inferiorem, utrinque glabra, supra laete viridis, infra multo pallidior, nervis 4–6-paribus angulo circ. 40° abeuntibus supra haud impressis subalbidis infra vix eminentibus. Inflorescentia axillaris 1–2-flora. Flores aperti non visi. Fructus oblongus atro-ruber pedicello ad 5 mm. longis suffulti; endocarpium 8 mm. longum, 3.5 mm. latum; loculi 1–2.

"China :—Lichiang Range, Yunnan. Lat. 27° 40′ N. Alt. 11,000 ft. Shrub of 6–9 ft. In immature fruit. Open thickets. June 1913." G. Forrest. No. 10,287.

"Mountains of the Chungtien plateau, S.E. of Chungtien. Lat. 27° 55′ N. Alt. 10,000–11,000 ft. Shrub of 6–12 ft. In fruit. In open scrub. July 1913." G. Forrest, No. 10,514.

This new species resembles closely *R. Martinii*, Schneider, but can be distinguished by the texture, colour, nervation, and serration of the leaves.

228 **Sabia dumicola,** W. W. Sm. Sp. nov.

Species ex affinitate *S. Schumannianae*, Diels a qua foliis membranaceis multo minoribus floribus in cymulas densas dispositis inter alia divergit.

Frutex 2–6 m. altus, ramis ramulisque glabris viridibus. Folia petiolo circ. 3 mm. longo glabro suffulta; lamina 3–4 cm. longa, 1.5–2 cm. lata, lanceolata, apice acuta vel acuminata, basi rotundata vel cuneata, tempore florendi tenuiter membranacea, margine leviter scariosa, utrinque glabra, nervis utraque facie inconspicuis. Flores foliis coaetanei, olivaceo-virides vel atro-rubridi, in cymas circ. 10-floras densas dimidium folii axillantis aequantes glabras dispositi; pedunculi circ. 1 cm. longi; pedicelli 3–4 mm. longi bracteis brevissimis subulatis caducis. Sepala ovata vel semiorbicularia circ. 2 mm. longa, obtusa. Petala 3.5–4 mm. longa, elliptica, obtusa. Stamina ad trientem corollae attingentia filamentis basi dilatatis. Pistillum stamina subaequans glabrum stigmate punctiformi. Fructus deest.

"China :—Hills to the east of Tengyueh, Yunnan. Lat. 25° N. Alt. 7000 ft. Open scrub in rocky situations. Shrub of 4–8 ft. Flowers olive-green. March 1913." G. Forrest. 9717.

"Ma-Chang-kai Valley, north of Tengyueh. Lat. 25° 20′ N. Alt. 6000–7000 ft. In thickets. Shrub of 10–20 ft. Flowers deep dull red. Feb. 1913." G. Forrest. No. 9569.

"Hills to the north of Tengyueh. Lat. 25° 20′ N. Alt. 7000 ft. Open scrub. Shrub of 6–9 ft. Flowers deep crimson-maroon. March 1914." G. Forrest. No. 12,200.

Sabia Wardii, W. W. Sm. Sp. nov..

Species affinis *S. tomentosae*, Hook. f. a qua petiolis longioribus, pedicellis pilosulis, sepalis sparsim pilosulis divergit.

Frutex vix 2 m. altus; ramuli pilis patentibus fulvidis dense tomentosi. Folia petiolo 6–7 mm. longo fulvido-tomentoso suffulta; lamina vulgo 6–12 cm. longa, 3–5 cm. lata, elliptico-lanceolata vel elliptica, apice acutissima vel breviter acuminata, basi rotundata, subcoriacea, supra atroviridis glabra nisi ad costam impressam pilosulam, infra subcuprea glabra costa nervisque sparsim pilosis exceptis; nervi 4–5 paria fere recto angulo abeuntes longe intra marginem arcuatim confluentes. Flores flavido-virides in paniculas ramosas dispositi; pedunculi 2.5–5 cm. longi dense fulvido-pilosi; ramuli pedicellique graciles dense pilosi. Sepala 1.5–2 cm. longa, ovato-lanceolata, acuta, extus sparsim pilosula. Petala circ. 3 mm. longa, fere 2 mm. lata, plus minusve elliptica, obtusa. Stamina circ. 2 mm. longa filamentis complanatis. Discus glaber. Ovarium glabrum vix 1 mm. diametro; stylus 1 mm. paulo superans stigmate minuto. Fructus deest.

"Northern Burma:—On granite conglomerate of Putao ridge, in thickets, partly shaded; 1200 ft. Lax shrub of about 5 ft. Flowers pale greenish-yellow. Nov. 1914." F. K. Ward. No. 1955.

This species must be closely akin to the little known *S. tomentosa*, Hook. f. which is described as having shorter petioles, the pedicels and branchlets of inflorescence glabrous, and much smaller flowers.

1539 **Schefflera (Heptapleurum) salweenensis,** W. W. Sm. Sp. nov.

Species valde affinis *S. racemosae*, Harms a qua habitu humiliore, ramis medulla fistulosa praeditis glabrioribus, foliolis anguste oblanceolatis basi cuneatis, floribus regulariter pentameris recedit; *Heptapleurum Hoi*, Dunn ex descriptione foliolis oblongis basi saepe rotundatis, petiolis lamina brevioribus differt.

Frutex 3–6 m. altus ramis crassis mox glabrescentibus medulla fistulosa praeditis. Folia superiora tantum visa petiolo 5–17 cm. longo glabro suffulta; foliola 3–5, petiolulis 1–4 cm. longis praedita; lamina ad 15 cm. longa, ad 6 cm. lata, oblanceolata, apice breviter acuminata, basi cuneata, margine integra, papyracea, glabra, supra viridis, infra olivacea vel subglauca, nervis utrinque 9–10 angulo acutiusculo ascendentibus utrinque in sicco subconspicuis, nervulis obscuris. Panicula magna 35 cm. longa, circ. 30 cm. lata, terminalis ramosissima; rami floresque racemose dispositi; pedunculus com-

munis brevis 3–4 cm. longus ; rhachis primo tomento stellato minuto fulvo induta, deinde subglabrescens ; pedicelli circ. 8 mm. longi fulvo-tomentelli. Flores pentameri ; ovarium circ. 2 mm. longum 5-costatum glabrum vel tomento sparsum ; calycis margo brevissimus dentibus inconspicuis acutis ; petala eis *S. racemosae* similia ; styli in unum columnarem coaliti ; fructus immaturus 5-locularis.

" China :—Mekong-Salween divide, Yunnan. Lat. 28° 10′ N. Alt. 9000 ft. Shrub of 12–20 ft. Flowers green, anthers yellow. In open thickets. Sept. 1914." G. Forrest. No. 13,308.

Schefflera (Heptapleurum) shweliensis, W. W. Sm. Sp. nov.

Species praecedenti valde affinis, foliolis coriaceis 7–11 breviter petiolulatis inter alia divergens.

Frutex 6 m. altus. Folia superiora tantum visa petiolo ad 24 cm. longo suffulta ; foliola 7–11, petiolulis vix 1 cm. superantibus praedita ; lamina ad 15 cm. longa, ad 4 cm. lata, anguste oblanceolata, apice longiuscule acuminata, basi anguste cuneata, margine integra, coriacea, glabra, supra atroviridis, infra olivacea, nervis utrinque 7–9, vix conspicuis, nervulis obscuris. Panicula vix omnino evoluta circ. 20 cm. longa, terminalis, in triente inferiore tantum ramosa, supra racemiformis ; pedunculus communis brevis ; rhachis stellato-tomentella ; flores cum eis *S. salweenensis* quadrant ; ovarium 5-loculare.

" China .—Shweli Valley, Yunnan. Lat. 25° 30′ N. Alt. 6000 ft. Shrub of 20 ft. Flowers immature. In thickets. Sept. 1913." G. Forrest. No. 11,817.

Scutellaria hebeclada, W. W. Sm. Sp. nov.

Species ex affinitate *S. Forrestii,* Diels sed foliis floribusque multo minoribus inter alia differt ; quoad habitum et magnitudinem ad *S. indicam,* Linn. spectat sed foliis fere sessilibus primo intuitu discrepat.

Herba ad 16 cm. alta, suberecta, basi paulo decumbens ibique ramosa ; rami obscure angulati, pilis glandulosis incanis patentibus densissime induti. Folia petiolo circ. 2 mm. longo dense longiterque hirsuto praedita ; lamina ad 1.2 cm. longa et lata, plus minusve deltoidea vel late ovata, apice ambitu rotundata, basi truncatula vel truncato-rotundata, margine crenis utrinque 4–5 crenulata, utrinque dense incano-setuloso-hirsuta. Racemi terminales ad 5 cm. longi glanduloso-hirsuti ; pedicelli 2–4 mm. longi ; bracteae foliaceae pedicellis longiores obovatae vel spathulatae. Flores rosei. Calyx 3–4 mm. longus dense

hirsutus. Corolla ad 1.5 cm. longa extra plus minusve glanduloso-pilosa.

"China :—Dry calcareous hills at Pau-pieu-kai, N.E. Yunnan. Alt. 2550 m. Upper lip of corolla rose, lower white. May–June." Maire. Nos. 510, 558 (anno 1914) in Herb. Edin.

5983 **Scutellaria shweliensis,** W. W. Sm. Sp. nov.

Species habitu fruticuloso, ramis foliisque dense hirsuto-glandulosis, floribus axillaribus solitariis inter se remotis racemum laxissimum formantibus inter affines chinenses bene notata:

Fruticulus 30–60 cm. altus ramosus ; ramuli substricti pilis glandulosis patentibus albidis dense molliterque hirsuti. Folia petiolo 1–4 mm. longo dense hirsutulo praedita ; lamina 0.8–3 cm. longa, 0.5–2 cm. lata, late ovata vel elliptica vel fere orbicularis, apice rotundata, basi plus minusve rotundata, margine subintegra vel paucicrenata, utrinque densiuscule hirsutula ; nervi 3–4 paria. Ramuli floriferi ad 20 cm. longi foliis parvulis remotis praediti ; flores in axillis solitarii pedicellis ad 5 mm. longis dense glanduloso-hirsutis suffulti ; folia axillantia pedicellis fere duplo longiora. Calyx 3–4 mm. longus densiuscule patenti-hirsutus. Corolla ad 1.6 cm. longa, extra glanduloso-pilosula pallide coerulea.

"China :—Shweli Valley, Yunnan. Lat. 25° N. Alt. 6000 ft. Shrubby plant of 1–2 ft. Flowers light blue. Open situations. May 1913." G. Forrest. No. 9871.

9859 **Spiraea lichiangensis,** W. W. Sm. Sp. nov.

Species affinis *S. gracili,* Maxim. ex Himalaya occidentali a qua foliorum serratura, corymbis paucifloris, floribus multo majoribus inter alia differt ; a *S. Rosthornii,* Pritzel foliis glaberrimis primo intuitu discrepat.

Frutex 1.2–1.8 m. altus ramis gracilibus plerumque glaberrimis pallide brunneis lucidis ; ramuli hornotini gracillimi purpurei glabri ; gemmae parvae acutae albo-pilosulae. Folia petiolo gracili 3–5 mm. longo glabro praedita ; lamina vulgo 2.5–3.5 cm. longa, 1.8–2.5 cm. lata, late ovata, in dimidio superiore ambitu triangulari dentibus mediocribus nigro-calloso-apiculatis subcrenatim notata, basi rotundata integra, in sicco tenuiter membranacea, utrinque glabra, supra pallide viridis, infra multo pallidior, dense et minute papillosa, reticulo nervorum in sicco utrinque manifesto. Inflorescentiae corymbosae 5–10-florae glaberrimae ad apices ramulorum foliosorum 3–5 cm. longorum orientes ; pedicelli 1–1.5 cm. longi ; flores albi circ. 1.2 cm. diametro ; calycis glaberrimi tubus circ. 2 mm. longus,

lobi triangulares acuti 1 mm. longi; petala rotundata circ. 5 mm. diametro; stamina 40–50 corollam superantia; carpidia circ. 1 mm. longa glabra stylo apicali longiusculo circ. 4 mm. longo, stigmate capitato. Fructus maturus deest.

"China :—Lichiang Range, Yunnan. Lat. 27° 35′ N. Alt. 12,000 ft. Shrub of 4–6 ft. Flowers creamy-white. In shady forests and thickets. July 1913." G. Forrest. No. 10,158.

"Mountains west of the Fengkow Valley, Yuman. Lat. 27° 40′ N. Alt. 12,000 ft. Shrub of 4 ft. Flowers white, faintly tinged rose. Open pine forests. June 1914." G. Forrest. No. 12,481.

7587 **Spiraea sinobrahuica,** W. W. Sm. Sp. nov.

Species aliquatenus intermedia inter *S. dasyantham,* Bunge ex regione pekinensi et *S. brahuicam,* Boiss. cum *S. Boissieri,* Schneid. ex Afghanistania; a primo floribus majoribus praeter alia signa divergit, ab aliis foliis basi plus minusve rotundatis magis quam cuneatis, umbellis multifloris recedit; a *S. hirsuta,* Schneid. et *S. chinensi,* Maxim. staminibus brevibus recognoscitur; a *S. yunnanensi,* Franch. foliis utrinque dense pilosulis vel tomentosis discrepat.

Frutex 1.2–2.4 m. altus ramis gracilibus; ramuli hornotini dense fulvido-tomentelli, annotini glabrescentes cinereo-brunnei; gemmae pluriperulatae albido-tomentellae. Folia petiolo 2–4 mm. longo dense fulvido-tomentello praedita; lamina 1.2–2.4 cm. longa, 0.8–1.9 cm. lata, late ovata vel obovata vel subelliptica, in dimidio superiore ambitu rotundato grosse et irregulariter dentata, basi rotundata vel late cuneata, in sicco papyracea, supra opaco-viridis dense et adpresse pilosula, infra paululo pallidior, plus minusve fulvido-tomentosa, nervis 3–4 paribus subtus elevatis. Inflorescentiae umbellato-racemosae, 10–20-florae, fulvido-tomentellae, ad apices ramulorum foliosorum 2–4 cm. longorum orientes; pedicelli circ. 1 cm. longi fulvido-tomentelli; flores albi circ. 8 mm. diametro; calycis tubus turbinatus 1 mm. longus dense albido- vel fulvido-tomentellus lobis triangularibus acutis 1 mm. longis tomentellis; petala rotundata; stamina 20 vix ad mediam corollam pertinentia; carpidia circ. 1 mm. longa longiuscule albo-pilosula stylo apicali 0.5 mm. longo praedita. Fructus maturus deest.

"China :—Eastern flank of the Lichiang Range, Yunnan. Lat. 27° 10′ N. Alt. 9000–10,500 ft. Shrub of 5–8 ft. Flowers white. Amongst scrub in side valleys. May 1910." G. Forrest. No. 5580.

"Descent to the Yangtze from the eastern boundary of the Lichiang Valley. Lat. 27° 15′ N. Alt. 9000–10,000 ft. Shrub

of 4–5 ft. Flowers creamy-white. Open stony pasture. June 1913." G. Forrest. No. 10,117.

7583 Var. **aridicola,** W. W. Sm. Var. nov.

A typo ramis saepe nudiusculis defoliatis sed vix spinescentibus, foliis minoribus subtus densissime tomentosis, inflorescentiis minoribus paulo recedit.

"China :—Arid region of Yangtze, Yunnan. 10,000 ft. Small compact shrub. May 1913." F. Kingdon Ward. No. 305.

"Small bushy shrub in shrub belt and forest, at 9000–10,000 ft., near Atuntsu, Yunnan. June 1913." F. Kingdon Ward. No. 476.

"Descent to the Yangtze Valley from the eastern range of the Lichiang Valley, Yunnan. Lat. 27° 30′ N. Alt. 9000–10,000 ft. Shrub of 4–6 ft. Flowers creamy-white. Open rocky situations. June 1913." G. Forrest. No. 10,084.

"Mountains of the Chungtien plateau. Lat. 27° 30′ N. Alt. 11,000 ft. Shrub of 2–3 ft. Flowers cream-yellow. Open rocky situations amongst scrub. July 1914." G. Forrest. No. 12,634.

This species and its variety are very close indeed to the Afghan species *S. brahuica*, Boiss. It must also be a near ally of *S. yunnanensis*, Franch. of which, however, Franchet says that the leaves are glabrous above.

7584 **Spiraea Wardii,** W. W. Sm. Sp. nov.

Species birmanica quae ex affinitate *S. canescentis*, D. Don esse videtur sed foliis minoribus ellipticis utrinque glabris, ramulis inflorescentiae plerumque unifloris differt ; in viciniam *S. alpinae*, Pallas fortasse melius posita.

Fruticulus circ. 1 m. altus ramulis annotinis plus minusve laxe albido- vel fulvido-tomentellis, senioribus glabris vel glabrescentibus atropurpureis vel nigridis cortice valde fissili praeditis. Folia petiolo vix 1 cm. longo glabro vel sparsim puberulo suffulta ; lamina 5–6 mm. longa, 3–4 mm. lata, elliptica, apice rotundata brevissime calloso-apiculata vel brevissime emarginata, basi rotundata vel late cuneata, integra, tenuiter papyracea, utrinque glabra, supra atroviridis nervulis obscuris, infra pallidior minute papillosa reticulo nervorum subconspicuo. Inflorescentiae subumbellato-racemosae vel si vis corymbosae circ. 10-florae fulvido-tomentellae, ad apices ramulorum foliosorum 2–3 cm. longorum orientes ; ramuli inflorescentiae 5–7 mm. longi tomentelli plerumque 1-flori, rarius 2-flori, folio caulinis simili vel bractea lineari apud medium

praedita; flores albi roseo-tincti fragrantes circ. 4 mm. diametro; calycis tubus turbinatus 1 mm. longus extus tomentellus, intus villosulus, lobi triangulares 1 mm. longi acuti glabri vel subglabri; petala rotundata vix 2 mm. diametro; stamina 20 corollam aequantia; carpidia albo-pilosula cum stylo subaequante 1 mm. longa; fructus maturus deest.

"Upper Burma:—Ridge of Naung-Chaung, Nwai divide. Small bushy compact shrub of 1–3 ft. in open. South-facing granite-boulder screes at about 12,000 ft. Flowers white, tinged with pink, fragrant. July 1914." F. Kingdon Ward. No. 1799.

Spiraea yunnanensis, Franch., var. **siccanea,** W. W. Sm. Var. nov.

A typo foliis subtus glaucis ad nervos tantum pilosis recedit.

"China:—Langkong-Hoching Mountains. Lat. 26° 16′ N. Alt. 8000 ft. Shrub of 3–5 ft. Flowers white. Open dry situations. May 1913." G. Forrest. No. 9912.

"Langkong-Hoching divide. Lat. 26° 10′ N. Alt. 8000 ft. Shrub of 3–5 ft. Flowers creamy-white. Dry stony situations amongst scrub. May 1913." G. Forrest. No. 9972.

I have not seen Franchet's type, but Forrest's specimens come from very near the type-locality—in lapidosis calcareis supra Mo-so-yn prope Lan-kong, alt. 2200 m.; the type is described as having leaves ashy-tomentose below, whereas the Forrestian plants are pilose on the veins only and may be specifically different. See also under *Spiraea sinobrahuica* above. From *S. chinensis*, Maxim. and *S. hirsuta*, Schneider, the plant collected by Forrest is distinguishable among other points by the short stamens; Franchet does not give any data indicating the length of the stamens in his *S. yunnanensis*.

Sporoxeia, W. W. Sm. Genus novum Melastomacearum.

Genus affine *Oxysporae*, DC. sed inflorescentiis axillaribus nec terminalibus nec paniculatis, floribus umbellatim dispositis praeter signa minora differt; structura floris fructusque cum *Oxyspora* bene congruit.

Calycis glabrati tubus campanulatus obscure 4-gonus; lobi 4, longiusculi, acuti. Petala 4, obovata vel suborbicularia, glabra. Stamina 8, paulo inaequalia vel subaequalia; antherae similes lineari-subulatae paulo curvatae, 1-porosae, basi breviter bilobatulae, connectivo basi non producto postice calcarato. Ovarium septis 4 calyci adhaerens, 4-loculare; stylus filiformis declinatus stigmate punctiformi. Capsula breviter quadrato-cylindrica, calyce carnosulo 8-costato inclusa, 4-locularis.

Semina minuta (matura non visa). Fruticulus gracilis erectus glaber vel glabrescens. Folia longe petiolata, orbicularia vel suborbicularia, breviter acuminata, minutissime serrulata, 5–7-nervia, minute glandulosa. Flores inter minores in axillis inferioribus (an semper ?) 2–5-fasciculati, rosei.

Sporoxeia sciadophila, W. W. Sm. Sp. nov.

Fruticulus circ. 1 m. altus ramulis plus minusve quadratis glabris vel primo sparsim furfuraceo-puberulis. Folia petiolo 4–8 cm. longo minute furfuraceo-glanduloso praedita ; lamina vulgo 7–10 cm. longa, 6–10 cm. lata, fere orbicularis, apice breviter et abrupte acuminata, basi plerumque rotundata, membranacea, margine levissime serrulata, utrinque glandulis minutis nitentibus crebre punctata, epilosa, nervis primariis 5–7 arcuatim percurrentibus conspicuis, trabeculis parallelis 15–20. Flores 2–5-nati ex axillis foliorum inferiorum (saepe delapsorum) orientes. Pedicelli circ. 1 cm. longi, fructu ad 2 cm. aucti, minute glandulosi. Calycis tubus circ. 4 mm. longus, circ. 3 mm. latus, basi rotundatus nec clavatus, anthopodio deficiente, carnosulus, minute nitenti-glandulosus ; lobi 3–4 mm. longi, ovati vel ovato-triangulares, apiculati, diu persistentes. Petala 5–6 mm. diametro rosea. Stamina circ. 1 cm. longa, filamentis glabris circ. 5 mm. longis, antheris calcare carnosulo postice ornatis. Ovarium vertice depressum glabrum. Capsula circ. 4 mm. longa valvis 4 dehiscens ; semina matura delapsa ; calycis costae 8 in fructu sicco conspicuae.

" Upper Burma :—Hpimaw limestone peak, in shady damp gullies of Naung-Chaung Valley. Alt. 4000–6000 ft. Undershrub of 2–4 ft. with bright pink flowers. Aug. 1914." F. K. Ward. No. 1775.

The generic name is intended to suggest the close affinity of the genus with *Oxyspora*, and must not be interpreted as indicating that the seeds of *Sporoxeia* are pointed. They may be, but ripe seeds are not yet available.

Stemona vagula, W. W. Sm. Sp. nov.

Species ex affinitate *S. japonicae*, Franch. et Savat. ; foliis lanceolatis trinerviis brevi-petiolatis inter alia differt.

Planta 30–45 cm. longa, scandens vel inter herbas fruticulosque longe vagans. Radices numerosae tuberibus 7–10 cm. longis circ. 2 cm. latis oblongo-ovoideis terminatae. Caulis flexuosus vel tortuosus, gracilis striatulus ; pars inferior (fere subterranea) pallida foliis squamiformibus membranaceis albidis 2–3 mm. longis remotis praedita ; pars superior bene foliata. Folia opposita vel saepius ternatim verticillata, plerumque

4–6 cm. longa, 0.7–2 cm. lata, lanceolata vel lineari-lanceolata apice acuta vel paulo acuminata basi cuneata vel subrotundata in sicco membranacea trinervia glaberrima ; petiolus 1–3 mm. longus. Pedunculus circ. 2 cm. longus petiolo adnatus uniflorus ; bracteola subulata 2–3 mm. longa medio affixa. Perianthium ± 2 cm. longum extus roseum intus album ; lobi oblongi 3–4 mm. lati acuti breviter apiculati. Stamina 4 ; filamenta circ. 1 mm. longa complanata ; antherae lineares ± 3 mm. longae dorsifixae connectivo basi adnatae ; filamenta in appendicem linearem erectam perianthium fere aequantem producta ; antherae in appendicem brevem antheras aequantem vel superantem nonnunquam apice bilobam productae. Ovarium parvum stigmate sessili. Fructus. . . . Semina ovoidea 5 mm. longa, 2.5 mm. lata, longitudinaliter alte ± 12-sulcata brunnea basi appendicibus vesiculosis numerosis praedita. Embryo minimus oblongus.

" China :—Descent to the Yangtze from the eastern boundary of the Lichiang Valley, Yunnan. Lat. 27° 15′ N. Alt. 8000 ft. Plant of 12–18 inches. Flowers white, flushed rose exterior. Margins of shady thickets. Aug. 1913." G. Forrest. No. 10,711.

Stemona Wardii, W. W. Sm. Sp. nov.

Species affinis *S. vagulae,* W. W. Sm. a qua foliis multo minoribus linearibus, staminibus atque appendicibus diversis recedit.

Planta gracillima circ. 30 cm. longa scandens. Radices non visae ; caulis pars inferior foliis squamiformibus praedita. Folia ternatim verticillata circ. 2 cm. longa, 1–2 mm. lata, linearia fere subulato-linearia in sicco membranacea nervulis tribus pererrata glabra. Pedunculus circ. 1 cm. longus petiolo adnatus uniflorus ; bracteola subulata medio affixa. Perianthium ad 2.3 cm. longum extus roseum intus album ; lobi oblongi ad 5 mm. lati apice apiculati sed vix acuti. Stamina 4 ; filamenta circ. 1 mm. longa ; antherae lineares circ. 4 mm. longae connectivo basi adnatae ; filamenta in appendicem linearem perianthium fere aequantem membranaceo-alatam producta ; antherarum appendices antheras subaequantes. Fructus deest.

" China :—Arid region of the Yangtze, Yunnan. Alt. 10,000 ft. Twiner with long straggling stems. May 1913." F. Kingdon Ward. No. 302.

This species appears to be the representative of *S. vagula* in the more arid areas of Yunnan. The flowers resemble those of that species.

Sterculia euosma, W. W. Sm. Sp. nov.

Species affinis *S. guttatae,* Roxb. a qua floribus majoribus fragrantibus intus fere glabris inter alia differt.

Arbor 6–18 m. alta ; ramuli primo dense ferrugineo-tomentosi tandem cinerei decorticantes. Folia ad apices ramorum conferta, juvenilia floribus coaetanea tenuiter membranacea utrinque plus minusve sparsim stellato-ferrugineo-tomentosa, adulta ad 24 cm. longa, ad 12 cm. lata, ovato-elliptica vel elliptica, apice breviter et subabrupte acuminata, basi plus minusve rotundata nec cordata, coriacea, integra, supra glabra vel subglabra infra pilis stellatis hic illic conspersa, costa media subtus valde elevata, nervis primariis utrinsecus 7–10 paribus conspicuis curvatis ; petiolus circ. 5 cm. longus primo dense ferrugineo-tomentosus mox glabrescens. Racemi numerosi ad apices ramulorum approximati folia juvenilia subaequantes plus minusve ferrugineo-tomentosi ; pedicelli 1–1.5 cm. longi. Flores bisexuales visi. Calycis circ. 3 cm. diametro segmenta fere ad basim libera lineari-lanceolata, medio fere 4 mm. lata, acutiuscula extus puberula, intus fere glabra, glandulis globosis conspersa. Stamina 10 ; columna glabra circ. 2 mm. longa. Pistillum albo-hirsutulum stylo pilosulo deflexo. Fructus maturus circ. 10 cm. longus, 3 cm. latus, lignosus ; semina ovoidea 2 cm. longa nigra.

" China :—Shweli Valley, Yunnan. Lat. 25° 30′ N. Alt. 6000 ft. Tree of 30–60 ft. Flowers fragrant, lilac with deep violet centre. In open situations. April 1913." G. Forrest. No. 11,862.

" Hills to the north of Tengyueh, Yunnan. Lat. 25° 15′ N. Alt. 7000 ft. Tree of 20–40 ft. Flowers dull crimson-lake. In mixed forests. May 1912." G. Forrest. No. 7720.

" Hills to the south of Tengyueh. Lat. 25° N. Alt. 6000 ft. Tree of 30–50 ft. In fruit. Seeds shining, deep chocolate brown. Interior of capsule bright scarlet, exterior deep ruddy buff or apricot, widely expanded after seed is cast. In forests. June 1912." G. Forrest. No. 8340.

Thalictrum semiscandens, W. W. Sm. Sp. nov.

Species distinctissima, habitu plus minusve scandente inflorescentiae ramulis pedicellisque praelongis capillaribus bene notata ; quoad structuram floris ad *T. atriplex,* Fin. et Gagn. appropinquare videtur.

Planta ad 3 m. alta ex collectore ; pars suprema tantum visa. Caules ramosi gracillimi glabri. Folia caulina petiolo circ. 6 cm. longo gracillimo praedita ; lamina ternatim 3–4-pinnata petiolulis capillaribus ultimis circ. 1 mm. longis ; foliola

4–12 mm. longa, 3–9 mm. lata, suborbicularia vel ovata vel elliptica, apice obtusa basi rotundata vel cuneata, integra vel trilobulata, utrinque glabra, membranacea. Inflorescentia ramosissima ramulis capillaribus, pedicellis ipsis ad 8 cm. longis vel ultro subscandentibus. Flores parvi albi. Sepala circ. 3 mm. longa elliptica. Stamina (ut videtur pauca) circ. 9 filamentis filiformibus apice vix dilatatis, antheris filamenta subaequantibus oblongis muticis. Achaenia plerumque 2–3 sessilia, circ. 5 mm. longa, apice basique angustata, valde striata, stylo conspicuo praedita.

"Upper Burma :—Hpimaw, near the Chinese frontier. Growing in damp thickets in shade of shrubs and long grass, in wet gulleys with granite sandy soil. Alt. 7000–8000 ft. Petals deciduous white. Stamens pale pink or violet. Plant reaches a height of 8 or 10 feet, supporting itself on the bushes by entangling its capillary flowering stems. August 1914." F. Kingdon Ward. No. 1857.

A peculiar species ; the long capillary subprehensile branches of the inflorescence are very remarkable.

504 **Thea taliensis,** W. W. Sm. Sp. nov.

Species sectionis *Eu-Thea* ; ob ovarium hirsutum staminaque brevissime coalita ex affinitate *T. sinensis*, Linn. esse videtur a qua habitu, foliis majoribus oblanceolatis vel obovatis, floribus multo majoribus, fructu lignoso differt.

Frutex circ. 3 m. altus. Rami satis crassi glabri. Folia petiolo 5–7 mm. longo glabro praedita ; lamina ad 14 cm. longa, plerumque 4–6 cm. lata, raro ad 7.5 cm., oblanceolata vel obovata, apice obtusiuscule acuminata, basi cuneata, margine serrata, papyracea, glabra, utrinque papilloso-asperulata, supra vix lucida, infra olivacea, nervis supra haud distinctis infra subconspicuis, nervulis immersis. Pedunculi 1–1.5 cm. longi glabri. Flores expansi 5–6 cm. diametro. Sepala orbicularia, 5–10 mm. diametro, coriacea, margine lato membranaceo ciliolato cincta, extra glabra, intus sericea. Petala alba, late elliptica, circ. 2 cm. lata, obtusa. Stamina basi tantum coalita circ. 1–2 cm. longa. Ovarium dense albovillosulum stylo basi villosulo supra subglabro. Fructus depresso-globosus plus minusve 5-angulatus pilosulus muro 3–4 mm. crasso lignoso praeditus ; semina in loculis solitaria.

"China :—Ghi Shan east of Tali Lake, Yunnan. Lat. 25° 48′ N. Alt. 9000 ft. Shrub of 10 ft. Flowers white. Open scrub. Aug. 1914." G. Forrest. No. 13,477.

"Western flank of the Tali Range. Lat. 25° 40′ N. Alt. 7000–8000 ft. Shrub of 10 ft. In open scrub. Aug. 1914." G. Forrest. No. 13,503.

"Flanks of the Mingkwong Valley, Yunnan. Lat. 25° 15′ N. Alt. 6000–7000 ft. Shrub of 6-12 ft. In fruit and amongst scrub. June 1912." G. Forrest. No. 8210.

Thunbergia adenophora, W. W. Sm. Sp. nov.

Species ex affinitate *T. grandiflorae,* Roxb.; ramulis longiuscule fulvo-setosis, bracteolis glandulis peziziformibus conspersis bene notata; a *T. Lacei,* Gamble inflorescentiis bracteolisque corollisque longe recedit, foliis setisque ad eam aliquatenus propinquat.

Frutex scandens ad 8 m. altus; ramuli setis fulvis circ. 5 mm. longis patentibus dense vestiti atque pubescentes. Folia petiolo 3–4 cm. longo basi incrassato tortoque longe setoso et pubescente suffulta; lamina vulgo 10–11 cm. longa, 6–7 cm. lata, plus minusve ovata, apice acuminata apiculata, basi breviter sed latiuscule cordata, margine irregulariter sinuato-lobulata, supra dense molliterque adpresso-setosa, infra densius; nervi e basi orientes 7, exteriores 2 indistinctiores. Inflorescentiae pendentes 30 cm. longae vel ultro racemiformes ex verticillis circ. 10 remotulis 2–4-floris compositae; rhachis setosa atque fulvo-tomentella; pedunculi 1.5–2.5 cm. longi fulvo-tomentelli apice expansi et glandulis peziziformibus conspersi; bracteae lanceolatae 2–3 mm. longae tomentellae; bracteolae 2, ovato-oblongae, 3 cm. paulo superantes, tomentellae, glandulis peziziformibus nigris dense conspersae. Calyx annuliformis subinteger circ. 2.5 mm. altus tomentellus. Corolla alba, ad basin saturate kermesina; tubus infra constrictus ad 3.5 cm. longus, basi sparsim setosulus, supra glaber; lobi rotundati 2–3 cm. diametro. Stamina 4 filamentis basi pubescentibus, antheris setosis calcaratis. Ovarium glabrum stylo gracili ad 2 cm. longo stigmate infundibuliformi.

"Burma:—Valley of the Taping. Lat. 24° 25′ N. Alt. 2000 ft. Scandent shrubby plant of 20–25 ft. Flowers white shaded to deep crimson-lake towards base. Open situations on trees. Feb. 1914." G. Forrest. No. 12,193.

Trailliaedoxa, W. W. Sm. et G. Forrest. Genus novum.

Rubiacearum genus novum incertae sedis; quoad structuram floris ad *Alberteas* tribum Africanum spectat; habitus *Hamiltoniam* potius suggerit.

Fruticulus ramosissimus caudice lignoso. Folia opposita parva brevissime petiolata. Stipulae bifidae subulatae. Flores roseo-albidi vel flavidi in cymulas subglobosas terminales et axillares dispositi parvi. Calycis tubus cylindricus; lobi 5 lineares dentibus nullis. Corolla infundibularis fauce glabra;

lobi 5 oblongo-lanceolati aestivatione sinistrorsum contorti. Stamina 5 fauci corollae inserta paululo exserta filamentis brevissimis ; antherae dorso affixae oblongae. Ovarium biloculare ; stylus filiformis ; stigma bilobum. Ovula in loculis solitaria apice pendula funiculo incrassato. Fructus (haud maturus) crustaceus forsan demum in coccos 2 indehiscentes divisus.

Species unica alpina in provincia yunnanensi Chinae occidentalis crescens.

Trailliaedoxa gracilis, W. W. Sm. et G. Forrest.

Fruticulus erectus ramosissimus 20–45 cm. altus, nunc paulo elatus usque ad 60 cm., habitu *Genistae,* caudice magno lignoso caules multos emittente ortus. Caules stricti graciles teretes virides dense minute crispato-pilosuli, vetustiores subglabrescentes, ramis ramulisque plurimis modice foliatis. Folia petiolo brevissimo vix 1 mm. excedente suffulta ; lamina 7–10 mm. longa 3–4 mm. lata obovata vel oblanceolata apice rotundata basi in petiolum sensim angustata integra subcoriacea supra viridis glabra vel sparsim pilosula infra pallidior ad costam albido-pilosula ceteroquin glabra vel subglabra nervis utraque facie obscurissimis ; stipulae bifidae breves subulatae. Cymulae subglobosae ramulos terminantes vel in axillis superioribus orientes 6–12-florae dense crispato-pilosulae folia subaequantes ; pedunculus ± 5 mm. longus ; pedicelli vix 1–2 mm. superantes dense pilosuli. Calycis tubus cylindricus circ. 1 mm. longus dense crispato-pilosulus ; lobi circ. 1 mm. longi lineares acuti. Corollae roseo-albidae vel flavidae tubus elongato-infundibularis circ. 3 mm. longus circ. 0.75 mm. latus extus glaber vel sparsim pilosulus, fauce intusque glaber ; lobi 5 patentes circ. 1.5 mm. longi, ± 1 mm. lati, oblongo-lanceolati obtusiusculi extus glabri vel sparse pilosuli intus glabri. Stamina fauci corollae inserta paullulo exserta glabra antheris 0.75 mm. longis dorso affixis filamenta brevissima superantibus. Ovarium biloculare stylo filiformi exserto circ. 5 mm. longo, stigmate bilobo ; ovula in loculis solitaria pendula funiculo incrassato. Fructus immaturus bisulcatulus crustaceus.

" West China :—Tufted shrub of 8–12 inches. Flowers ruddy yellow. On limy pasture and ledges of cliffs in the mountains in the N.E. of the Yangtze bend, Yunnan. Lat. 27° 45′ N. Alt. 11,000 ft. July 1913." G. Forrest. No. 10,535.

" Shrub of 2 ft. Flowers rosy-white. Stony pasture and amongst shrub and side valleys in the mountains in the N.E. of the Yangtze bend. Lat. 27° 45′ N. Alt. 9000 ft. Aug. 1913." G. Forrest. No. 10,713.

" Shrub of 12–18 inches. Flowers creamy-white. Open

rocky pasture and amongst scrub in the mountains of the Chungtien plateau, Yunnan. Lat. 27° 30′ N. Alt. 9000 ft. July 1914." G. Forrest. No. 12,638.

The generic name is in honour of the wife of the collector. The exact position of this genus in the *Rubiaceae* is not satisfactorily determined. Mature fruit would aid materially. The plant in its floral structure is closely allied to the *Alberteae*, a tribe confined to Africa; from them, however, it is widely different in habit. In this latter respect it suggests *Hamiltonia* among the *Paederieae*.

Viburnum foochowense, W. W. Sm. Sp. nov.

Species affinis *V. Fordiae,* Hance a quo foliis ovato-lanceolatis subacuminatis supra lucidulis sparsim pilosulis corymbis brevi-pedunculatis inter alia differt.

Frutex ramulis primo pilis fasciculatis dense fulvo-tomentosis. Folia petiolo 3–10 mm. longo tomentoso suffulta; lamina 4–8 cm. longa, 1.5–4.5 cm. lata, plerumque ovato-lanceolata vel ovata, basi late cuneata vel subrotundata, apice subacuminata vel acuta, margine serrato-dentata, chartacea vel tempore maturitatis fructuum subcoriacea, supra atro-viridis lucida ad costam impressam setosula caeterum sparsim pilosula vel glabra, minute punctulata, infra pallidior ad costam nervosque eminentes setosula, caeterum sparsius setosula vel glabrescens; nervi utrinque 5–6 subparalleli ad marginem excurrentes; stipulae nullae. Corymbus terminalis circ. 5 cm. diametro, pedunculo 3–10 mm. longo tomentoso suffultus, radiis primariis plerumque 5 fulvo-tomentosis, floribus e radiis ordinis tertii natis. Calycis lobi 0.5 mm. longi triangulares cum ovario pilosi. Corolla rotata 5 mm. diametro ad tres partes in lobos suborbiculares divisa extra pilosula. Stamina 3 mm. longa corollam paululo superantia. Drupa ovoidea circ. 5 mm. longa, rubra glabra.

"On the Min River, Foochow, China. Nov. 1897 and Jan. 1898." Coll. W. R. Carles. Nos. 834, 852.

Viburnum parvifolium, W. W. Sm. Sp. nov.

Species affinis *V. Fordiae,* Hance et *V. hirtulo,* Rehder a quibus foliis parvis 2–4.5 cm. longis inter alia dignoscitur.

Frutex ramulis primo pilis fasciculatis dense fulvo-tomentosis tandem glabrescentibus brunneis. Folia petiolo ± 5 mm. longo tomentoso suffulta; lamina saepe rotundato-ovata, 2 cm. longa, fere 2 cm. lata, nonnunquam ovata, ad 4.5 cm. longa, ad 3 cm. lata, basi plerumque rotundata, apice acuta (saepe brevissime), margine dentata, in sicco membrancea, supra

sparsim pilosula, ad costam impressam setosula, infra ad costam nervosque eminentes dense setosula, caeterum sparsius ; nervi utrinque 5–6, subparalleli ad dentes excurrentes ; stipulae nullae. Corymbus terminalis circ. 5 cm. diametro, pedunculo 5–10 mm. longo tomentoso suffultus, radiis primariis 3–6 fulvo-tomentosis, floribus e radiis ordinis tertii vel quarti natis. Calycis lobi circ. 0.5 mm. longi triangulari-ovati cum ovario pilis fasciculatis dense pilosi. Corolla rotata 4 mm. diametro ad tres partes in lobos suborbiculares divisa extra pilosa. Stamina corollam paululo superantia. Drupa ovoidea ± 6 mm. longa, ± 4 mm. lata rubra glabra apice pilosula excepta.

" At Thaiyong, a mountain valley 2000 ft. elevation, sixty miles west of the port of Swatow, China. Sept. 1901." Coll. Dr. J. M. Dalziel. Nos. 173, 174.

" At Wukingfu, west of Swatow." Dalziel. No. 175.

Viburnum Wardii, W. W. Sm. Sp. nov.

Species ex affinitate *V. erubescentis,* Wall. et *V. oliganthi,* Batal. ; ab ambobus nervatione foliorum inter alia facile discriminatur ; nervi incurvi nervulique subtus bene distincti arcte et pulchre reticulati.

Arbor parva ex collectore 7–10 m. alta ; ramuli glabri vel subglabri mox cinerascentes. Folia petiolo ± 1.5 cm. longo glabro vel sparsim pilosulo praedita, oblongo-lanceolata vel lanceolata, 8–12 cm. longa, 3–6 cm. lata, basi ± rotundata, apice acuminata, margine regulariter serrata serraturis indurato-apiculatis, membranacea, maturitate utrinque glabra vel subtus ad costam pilis stellatis parcissime conspersa, supra atroviridia, infra pallidiora nervis utrinque 5–7 incurvatis cum nervulis pulchre reticulantibus. Inflorescentia terminalis paniculata in nostris speciminibus ad 5 cm. longa, pilis fasciculatis ± conspersa ; pedunculus 2–3 cm. longus. Calycis lobi triangulares acuti vel obtusiusculi circ. 1 mm. longi glabri. Corolla alba fragrans tubulosa ± 8 mm. longa glabra vel subglabra ; lobi orbiculares circ. 2 mm. diametro. Stamina ad summam corollam ± attingentia. Ovarium turbinatum glabrum vel pilis furcatis sparsissime conspersum. Fructus deest.

" E. Upper Burma :—Small bushy tree of 20–30 feet. By streams in forest, in damp and deep shade. Flowers white, waxy-looking, fragrant. At an elevation of 8000 ft., near Htawgaw, Valley of Naung-Chaung, Lashi country. June 1914." F. Kingdon Ward. No. 1620.

This species belongs to the section *Thyrsosma,* is akin to *Viburnum erubescens,* Wall., and is readily distinguished among other marks by the nervation of the leaf.

Zizyphus montana, W. W. Sm. Sp. nov.

Species ex affinitate *Z. xylopyri,* Willd. et *Z. yunnanensis,* Schneider; inflorescentiis vix pedunculatis, fructibus flavis glabris bene notata.

Frutex 2–9 m. altus spinosus; spinae 5–15 mm. longae validae rectae; ramuli primo dense ferrugineo-tomentelli mox glabrescentes cinerascentes vel rubescentes lenticellis parvis rotundis albidis notati. Folia alterna petiolo 5–10 mm. longo tomentello mox glabro suffulta; lamina 3–8 cm. longa, 2–3 cm. lata, elliptica, apice rotundata vel (eodem specimine) breviter obtuseque acuminata, basi obliqua plus minusve rotundata, crenato-dentata, primo membranacea tandem papyracea, supra glabra subtus ad nervos primarios tres nervulosque ferrugineo-pilosula, tandem ex toto glabra. Inflorescentiae axillares congestae 10–30-florae pedunculis nullis vel subnullis, pedicellis petiolos subaequantibus tomentellis; flores virides 5–6 mm. diametro subumbellatim dispositi; alabastra dense tomentella. Sepala deltoidea vix 2 mm. longa acuta. Petala sepalis fere aequilonga cucullata. Styli plerumque duo ad medium coaliti. Fructus globosus circ. 2 cm. diametro glaber flavus; mesocarpium crassum spongiosum; endocarpium 1.5 cm. diametro muro 3 mm. crasso; semina 2 olivacea circ. 1 cm. longa et lata.

"China :—Descent to the Yangtze from the eastern boundary of the Lichiang Valley, Yunnan. Lat 27° 15′ N. Alt. 9000–10,000 ft. Spinous shrub of 20–30 ft. In fruit, fruits light yellow. In thickets. Aug. 1913." G. Forrest. No. 10,629.

"Spinous shrub of 6–8 ft. Immature fruit. July 1913." G. Forrest. No. 10,372.

"On the Tong Shan in the Yangtze bend, Yunnan. Lat. 27° 20′ N. Alt. 9000 ft. Spinous shrub of 20 ft. In fruit. In open thickets. Aug. 1913." G. Forrest. No. 10,889.

"Mountains of the Chungtien plateau, Yunnan. Lat. 27° 30′ N. Alt. 9000 ft. Shrub of 20 ft. Flowers green. Open dry rocky situations. April 1914." G. Forrest. No. 12,401.

Mr. Forrest notes that the priests use the fruit of this plant as beads for their rosaries.

Printed under the authority of His Majesty's Stationery Office
By NEILL & Co., LTD., Edinburgh.

Vol. X. FOR OFFICIAL USE. Numbers XLVII–XLVIII.

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FROM THE

ROYAL BOTANIC GARDEN, EDINBURGH.

NOVEMBER 1917.

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EDINBURGH:
PUBLISHED BY HIS MAJESTY'S STATIONERY OFFICE

SOLD AT THE GARDEN,
And to be purchased, either directly or through any Bookseller, from
H.M. STATIONERY OFFICE (Scottish Branch),
23 Forth Street, Edinburgh.

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NEW SPECIES OF RHODODENDRON.

BY

PROFESSOR BAYLEY BALFOUR, F.R.S.

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Rhododendron aganniphum, Balf. f. et Ward.

Frutex ad 1 m. altus ramis crassis. Ramuli annotini purpurei circ. 4 mm. diam. glaberrimi nitidi tandem grisei decorticantes. Alabastra ignota. Folia petiolata ad 9.8 cm. longa; lamina crasse coriacea oblonga vel elliptico-oblonga ad 9 cm. longa 4 cm. lata apicem versus paullo attenuata acuta corneo-mucronata margine cartilaginea recurvata basi lobis rotundatis subcordulata, supra atro-viridis opaca costa media sulcata sulco pilis longis albidis nunc rubidis sebaceis impleto venis primariis utrinsecus circ. 12 subsulcatis superficie in modum squali corii leviter rugulosa pilorum juvenilium vestigiis sparsissime notata et papillis epidermicis petasiformibus minutissime asperata, subtus albida vel flavido-albida indumento laevi subcrasso compacto nitente persistente uniformi ubique vestita indumenti pilis floccosis aequilongis a pede brevi radiatim ramosis ramulis latis albidis vesiculosis prismatice scintillantibus intricatim intertextis saepe (an semper ?) fungorum mycelio albido vel brunneo-colorato intermixtis costa media venisque primariis elevatis et indumento obtectis; petiolus ad 8 mm. longus crassus supra sulcatus glaber sulco pilorum vestigiis plus minusve pleno excepto. Flores in umbellam multifloram (circ. 10–12) terminalem vix racemosam dispositi; bracteae intimae oblongae vel obovato-oblongae membranaceae subflavidae circ. 2.7 cm. longae 1 cm. latae extus intusque plus minusve sericeo-pilosae; bracteolae ignotae; pedicelli circ. 8 mm. longi stricti crassi carnosuli glabri sub calyce haud ampliati. Calyx cupularis carnosulus cupula glabra margine saepe lobatim undulata praeditus vel in lobos 5 carnosulos minutos rotundatos vel ovatos vel deltoideos acutos inaequales ad 2 mm. longos dorso glabros margine minutissime irregulariterque albido-floccosos divisus. Corolla infundibuliformi-campanulata circ. 3.5 cm. longa postice copiose coccineo-maculata extus glabra tubo postice subcarnosulo ibique puberulo, lobis 5 inaequalibus postico majore rotundatis circ. 1.4 cm. longis 1.8 cm. latis emarginatis crenulatis. Stamina 10 inaequalia longiora circ. 2.2 cm. longa breviora circ. 1.2 cm., filamentis cylindricis albidis vel pallide roseis basim versus sparse puberulis ima basi nudis, antheris pallide roseis (connectivo intensius) circ. 2 mm. longis. Discus lobulatus viridis glaber. Gynaeceum circ. 2.5 cm. longum corolla multo brevius staminibus paullo longius; ovarium circ. 5 mm. longum

conoideum subatro-viride sulcatum glabrum laeve ; stylus ruber glaber ad apicem in cupulam evolutus stigma subspongiosum lobulatum gerens.

Species *Rh. taliensi,* Franch. affinis foliis plus minusve elliptico-oblongis, indumento subfoliari compacto albido nitente, petiolo subglabro, pedicellis glabris certe distincta.

Tibeto-Yunnan frontier. Doker La. 14,000–15,000 ft. 2–3 ft. high. Dense scrub. F. Kingdon Ward. No. 768. July 1913.

Tibeto-Yunnan frontier. Ka-gwr-pw. 15,000 ft. Scrub rhododendron with dwarf species, etc. F. Kingdon Ward. No. 822. 19.7.13.

A distinct species of the Taliense series and near to *Rh. taliense,* Franch. itself. The white compact shining indumentum on the under side of the more elliptic and larger leaves enables one to differentiate the plants at sight, and then the nearly glabrous petioles and the glabrous pedicels confirm the diagnosis. In aspect the foliage recalls in miniature that of *Rh. Clementinae,* G. Forrest, but that is a plant which has 7 lobes to the corolla and stamens about 16, not as in the Taliense series 5 corolla-lobes and 10 stamens.

Rhododendron alutaceum, Balf. f. et W. W. Sm.

Frutex ad 4 m. altus ramis crassis. Ramuli annotini circ. 6 mm. diam. dense lanato-tomentosi, indumenti per annos persistentis pilis ex rhachi centrali longa in ramulos longos tenues obtusos intricato-intertextos ex toto deliquescente constructis et stratum glandularum capitatarum breviter stipitatarum inferum occludentibus. Alabastrorum oblongo-ovoideorum eviscidorum perulae extimae fulvidae basi rotundatae crustaceo-coriaceae circ. 6 mm. longae late carinatae extus pilis sebaceis rufis brevibus dense floccoso-tomentosae intus sericeae margine floccoso-ciliatae in caudam recurvatam aequilongam dense puberulam productae, intermediae late ovatae vel obovatae mucronatae, intimae membranaceae sucino-coloratae ligulato-spathulatae ad 3.5 cm. longae 7 mm. latae apice rotundatae subapiculatae extus floccoso-pubescentes et prope apicem glandulis aurantiacis vel rufis paucis praeditae intus inferne glabrae superne sericeae margine verticeque floccoso-ciliatae ; folia juvenilia revoluta supra pilis mox deciduis dense albido-floccosa et glandulis clavatis breviter stipitatis aurantiacis praedita, subtus sucino-colorata indumento bistrato dense lanata strato infero ex floccis fere sessilibus breviterque radiatim ramosis (ramulorum cellulis latis vesiculosis) composito, strato supero ex pilis longis ab axe centrali iterum atque iterum ramosis (ramulis tenuibus obtusis late patentibus intertextis) aedificato.

Folia petiolata ad 15.5 cm. longa; lamina crasse coriacea oblonga vel late lanceolata ad 14 cm. longa 3.5 cm. lata sursum attenuata apice acuta corneo-tuberculata margine cartilaginea revoluta basi obtusa vel rotundata et subcordulata, supra olivacea vel nigro-olivacea opaca costa media sulcata venis primariis utrinsecus circ. 15 vix conspicuis caeteroquin reticulata rugulosa primo aspectu glaberrima sed ad costae mediae sulcum floccorum et glandularum juvenilium vestigiis plus minusve notata, subtus indumento alutaceo crasso lanato vestita sed costa media elevata nunc glabrescente venis venulisque caeteris occultis indumento bistrato ex pilis floccosis et glandulis ut ad laminam foliorum juvenilium aedificato; petiolus ad 1.5 cm. longus plerumque brevior crassus indumento laminae vestitus sed saepe strato supero plus minusve detersili. Flores in racemo-umbellam circ. 12-floram dispositi rhachi circ. 1.8 cm. longa sparsim floccosa et glandulosa; bracteae exteriores steriles fulvidae late ovatae circ. 1.5 cm. longae 9 mm. latae apiculatae carinatae extus floccoso-tomentosae prope apicem glandulis paucis intermixtis apiculi pilis sebaceis kermesinis intus basi glabrae superne sericeae, fertiles oblongo-spathulatae circ. 2.5 cm. longae 9 mm. latae saepe subtruncatae apiculatae eglandulosae utrinque dense sericeae verticis apiculique pilis sebaceis kermesinis; bracteolae breves circ. 8 mm. longae membranaceae uninerviae pedicellis multo breviores adpresso-pilosae eglandulosae; pedicelli validi ad 2 cm. longi substraminei ad apicem obliqui glandulosi (glandulis capitatis kermesinis breviter stipitatis stipite albido) et pilis floccosis sparsim conspersi. Calyx minutus cupularis carnosulus circ. 1 mm. longus, cupulae glabrae atro-purpureae margine undulato-lobulato, lobulis integris subaurantiacis glandulis capitatis stipitatis paucissimis praeditis. Corolla rosea postice varo basali kermesino et maculis picta subcampanulata circ. 3.5 cm. longa genitalia longe superans extus glabra intus puberula basi 5-gibbosa retusa 5-lobata, lobis circ. 1.5 cm. longis 2 cm. latis rotundatis emarginatis. Stamina 10 inaequalia corolla et gynaeceo multo breviora longiora circ. 2 cm. longa breviora circ. 1 cm., antheris circ. 2 mm. longis, filamentis deorsum latioribus ima basi subnudis superne ad apicem ovarii et ultra pubescentibus eglandulosis. Discus nigricans glaber undulatus. Gynaeceum circ. 2.8 cm. longum; ovarium subovoideum circ. 6 mm. longum nigricans vel nigro-brunneum leviter sulcatum minutissime papillatum glandulosum glandulis laete rubris capitatis breviter albido-stipitatis; stylus glaber flavidus sub stigmate lobulato subcupulari vix expansus.

Species *Rh. taliensi*, Franch. affinis foliis multo longioribus, inflorescentia racemoso-umbellata, floribus majoribus roseis,

pedicellis capitato-glandulosis, calycis lobis glanduloso-ciliatis, ovario glanduloso facile distinguenda.

E.N.W. Yunnan. Kari Pass. Mekong-Yangtze divide. Alt. 12,000 ft. Lat. 27° 40′ N. In open thickets. Shrub of 12–14 ft. Flowers rose with crimson markings. G. Forrest. No. 13,098. Aug. 1914.

Rh. alutaceum is a well-marked species of the Taliense series. Its habit recalls *Rh. adenogynum*, Diels, and plants of its series, but there the calyx is always large and very different from that of *Rh. alutaceum*.

Rhododendron apodectum, Balf. f. et W. W. Sm.

Frutex ad 2 m. altus ramis rigidis crassiusculis. Ramuli hornotini circ. 2.5 mm. diam. nigro-purpurei pilis floccosis niveis e stipite brevissimo ramulisque plurimis vacuis vesiculosis radiatis aedificatis vestiti nec setulosi, annotini plerumque glabri tandem grisei decorticantes. Alabastrorum oblongorum acutorum perulae extimae late ovatae vel subrotundatae circ. 3 mm. diam. crustaceo-coriaceae brunneae carinatae extus plus minusve niveo-floccosae margine superne minute ciliatae, intimae lineari-lanceolatae circ. 1.7 cm. longae 3.5 mm. latae acutae extus ad apicem floccosae margine breviter ciliatae. Folia petiolata ad 8 cm. longa ; lamina crasse coriacea oblonga vel oblongo-elliptica vel elliptica nunc obovata vel lanceolata ad 7 cm. longa 3.5 cm. lata apice rotundata vel obtusa vel acutiuscula margine cartilaginea basi subtruncata vel fere cordulata vel obtusa nec in petiolum angustata, supra convexa nigro-viridis nitida obscure bullata costa media venisque primariis utrinsecus circ. 12 anguste sulcatis glaberrima (in juventute revoluta pilis floccosis albis plus minusve obtecta) sed floccorum juvenilium vestigiis hic et illic notata superficie in modum squali corii leviter rugulosa, subtus concava sordide grisea vel subalbida vel pallide fulva costa media erubescente elevata glabrescente venis primariis fere occultis caeteroquin indumento unistrato tenui compacto laevi persistente e pilis albidis vel subfulvidis floccosis intertextis (eis ramulorum similibus) constructo vestita ; petiolus circ. 1 cm. longus purascens supra sulcatus ibique tomentosus glabrescens (in juventute omnino albo-floccosus). Umbella vera in specieminibus nostris 2–3-flora terminalis ; bracteae extimae crustaceo-coriaceae rotundatae acuminato-apiculatae ad 9 mm. longae (apiculo incluso) 6 mm. latae carinatae extus plus minusve albido-floccosae, fertiles subobovatae truncatae apiculatae circ. 1.7 cm. longae circ. 9 mm. latae submembranaceae extus sericeae ; bracteolae parvae lineares pilosae circ. 1.2 cm. longae pedicellos superantes vel eos aequantes ; pedicelli ad 1.2 cm. longi

indumento detersili dense fulvo-tomentosi tandem sparsim et floccosim pilosi et glabriusculi esetulosi. Calyx subgrandis circ. 8 mm. longus cupularis apertus in limbum membranaceum flavidum irregulariter 5-lobatum expansus extus glaber, lobis inaequalibus rotundatis vel subtruncatis saepe 2 mm. longis 4 mm. latis margine subciliatis. Corolla crassa intense rosea basi subaurantiaca tubuloso-campanulata circ. 3.5 cm. longa gibbosa utrinque glabra, lobis 5 erecto-patentibus rotundatis emarginatis circ. 1.1 cm. longis 1.2 cm. latis. Stamina 10 inaequalia longiora circ. 2.25 cm. longa breviora circ. 1.5 cm. longa, filamentis deorsum latioribus prope basim pubescentibus, antheris parvis intense purpureis circ. 2.5 mm. longis. Discus minute puberulus. Gynaeceum circ. 2.7 cm. longum ; ovarium circ. 6 mm. longum nigro-purpureum sulcatum pilis fasciatis numerosissimis adscendentibus fuscis praecipue ad juga dense obtectum ; stylus nigro-purpureus glaber staminibus longior sub stigmate lobulato haud expanso vix ampliatus. Capsula (vix matura) 1.5 cm. longa 6 mm. lata nigra rufo-floccosa recta vel paullo curvata.

Species ex affinitate *Rh. sanguinei*, Franch. foliis majoribus, indumento subfoliari densiore, calyce membranaceo majore staminumque filamentis pubescentibus bene distincta.

W. Yunnan. Western flank of the Shweli-Salween divide. Alt. 10,000–11,000 ft. Lat. 25° 20′ N. Shrub of 4–8 ft. In fruit. Margins of rhododendron forest. G. Forrest. No. 8987. Aug. 1912.

W. Yunnan. Western flank of the Shweli-Salween divide. Alt. 10,000 ft. Lat. 25° 20′ N. Shrub of 4–6 ft. In fruit. Open situations amongst rocks. G. Forrest. No. 9054. Aug. 1912.

W. Yunnan. Shweli-Salween divide. Alt. 10,000 ft. Lat. 25° 30′ N. Shrub of 4–6 ft. Flowers deep crimson. In open scrub. G. Forrest. No. 11,896. June 1913.

W. Yunnan. Shweli-Salween divide. Alt. 10,000 ft. Lat. 25° 30′ N. Shrub of 4–5 ft. Flowers deep rose, flushed orange towards base. Open situations amongst rock and scrub. G. Forrest. No. 11,968. June 1913.

This is a new species of that delightful series of rhododendrons which centres in *Rh. haematodes*, Franch., and it has the characteristic attractive features of the series in the firm foliage with pale under-surface indumentum, the thick tubular campanulate 5-lobed corolla of a rich orange-red tint and the deep purple anthers. From *Rh. sanguineum* its membranous calyx and pubescent staminal filaments separate it. From *Rh. dichroanthum*, Diels the rounded not tapered base of the leaf, the different indumentum of the ovary, and the larger capsule are distinctive marks. The plant is in cultivation.

Rhododendron bivelatum, Balf. f.

Frutex ramulis annotinis circ. 1.5 mm. diam. sordide furfuraceis lepidotis et puberulis, senioribus griseis vel nigricantibus decorticantibus. Alabastrorum angustorum fusiformium circ. 3 mm. diam. perulae extimae coriaceae triangulares extus lepidotae margine ciliatae, intimae spathulatae membranaceae pallide brunneae circ. 8 mm. longae 5 mm. latae dorso dense lepidotae margine ciliatae intus centro pubescentes; folia juvenilia convoluta utrinque dense imbricatim albido-lepidota supra in sulco costae mediae subtusque ubique puberula margine ciliata. Folia petiolata ad 4.5 cm. longa; lamina coriacea rigida oblongo-elliptica vel oblonga nunc anguste obovata ad 4 cm. longa et 2 cm. lata apice obtusa angustata mucrone tuberculato decurvato terminata margine cartilaginea subcrenulata et vestigiis ciliarum delapsarum notata basi obtusa vel cuneata, utrinque pallide viridis, supra subrugulosa subnitida costa media sulcata et puberula venis primariis utrinsecus circ. 6 paullo sulcatis caeteroquin squamarum peltatarum deciduarum foveolis vacuis vel squamarum vestigiis griseis vel nigricantibus notata, subtus puberula et dense lepidota squamis rufis nitidis discontiguis uniformibus ex umbone lato aurantiaco- vel rufo-annulato et instita angusta aedificatis intervallis epidermicis circ. 0.12 mm. diam. viridibus, costa media sparsim lepidota sed perspicue puberula venisque primariis elevatis; petiolus circ. 0.5 cm. longus erubescens supra sulcatus lepidotus et puberulus. Flores in umbellas paucifloras (2– ?) ad apicem ramulorum fasciculatas dispositi; bracteae sub anthesi plus minusve persistentes, exteriores steriles crustaceae pallide brunneae plus minusve rotundatae et ciliatae carinatae mucronulatae dorso lepidotae et ad basim praecipue plus minusve pilosae, interiores fertiles plus minusve membranaceae obovato-spathulatae truncatae emarginatae et in sinu breviter apiculatae circ. 1 cm. longae et supra 9 mm. latae intense brunneae vertice breviter albo-ciliatae margine piloso-ciliatae dorso lepidotae et puberulae intus plus minusve puberulae; bracteolae spadiceae filiformiter claviformes circ. 5 mm. longae pedicellis multo breviores extus sparsim lepidotae vertice albo-cristatae caeteroquin epilosae; pedicelli circ. 1 cm. longi lepidoti et puberuli stricti bracteis inclusi. Calyx minutus circ. 1.5 mm. longus dense lepidotus lobis vix 0.5 mm. longis brunneis latis semi-lunatis. Corolla rosea infundibuliformis circ. 2 cm. longa extus lepidota epilosa intus minute puberula et postice sparsim rubro-maculata, lobis subaequalibus ovalibus crenulatis apice rotundatis circ. 1 cm. longis et 8 mm. latis. Stamina 10 paullo inaequalia longiora circ. 2.1 cm. longa corollam subaequantia breviora circ. 1.5 cm., antheris parvis 1.5 mm. vel

1 mm. longis, filamentis basi vix latioribus glabris nunc pilis solitariis praeditis. Discus puberulus. Gynaeceum circ. 2.4 cm. longum corollam et stamina superans; ovarium cylindrico-conoideum paullo sulcatum circ. 3 mm. longum nigro-tinctum dense imbricatim lepidotum vertice leviter pilosum; stylus glaber erubescens sub stigmate magno lobulato atro-purpureo paullo expansus.

Species *Rh. siderophyllo,* Franch. affinis foliis minoribus subtus puberulis, bracteolis pedicellis multo brevioribus, inter notas alias facile recognoscenda.

N.E. Yunnan. Dry hills behind Mo-tsou. Alt. 850 m. (*sic* ?). Shrubby rhododendron with persistent leaves and small rose flowers. Maire. No. 137 in Herb. Edin.

A species akin to *Rh. siderophyllum,* Franch. which to our present knowledge does not spread out of East Yunnan. *Rh. bivelatum* has smaller leaves, which are not so thick as those of *Rh. siderophyllum,* and can be recognised at once by the somewhat unusual character in its type of leaf of a coating of hairs on the under-leaf surface intermixed with the peltate scales. The petiole shares the puberulous as well as lepidote character. Like *Rh. siderophyllum* our species retains the bracts during flowering and they completely envelop the pedicels, but the bracteoles in *Rh. bivelatum* are much shorter, only about half the length of the pedicels, whilst in *Rh. siderophyllum* they are longer than the pedicels.

I only know the plant in the single sheet of specimens which came to us from Abbé Maire, and there is not another plant in his collection for which it can be mistaken. Whilst the details of character especially of the flower take it to *Rh. siderophyllum,* yet it is not as like that species as is another West Yunnan species—*Rh. stereophyllum,* Balf. f. et W. W. Sm. (see p. 159). The three species can be recognised at sight thus :—

Rh. siderophyllum . Twigs stout red densely lepidote and becoming closely warted; leaves large pointed.

Rh. stereophyllum . Twigs stout red distantly lepidote and puberulous with short hairs and becoming distantly warted; leaves medium rounded.

Rh. bivelatum . . Twigs thin scurfily lepidote and puberulous with long hairs, not becoming warted; leaves smaller pointed obtuse.

Rhododendron blandulum, Balf. f. et W. W. Sm.

Frutex ad 1.5 m. altus. Ramuli hornotini nigricantes circ. 3 mm. diam. pilis floccosis mox deciduis vestiti, annotini fulvidi pilorum vestigiis notati, vetustiores sordide grisei decorticantes. Alabastrorum oblongorum apice attenuatorum perulae exteriores brunneae crustaceo-coriaceae late ovatae vel subrotundatae mucronulatae extus intusque puberulae margine minute ciliatae circ. 7 mm. longae et latae, interiores longe obovatae spathulatae membranaceae circ. 2 cm. longae 8 mm. latae extus sericeo-puberulae apice mucronatae barbatae margine ciliatae. Folia aromatica petiolata ad 9.5 cm. longa ; lamina oblonga ad 7.5 cm. longa 3.5 cm. lata apice obtusa apiculo triangulari corneo-tuberculato margine cartilaginea paullo revoluta basi subtruncatula vel lobis subrotundatis fere cordulata, supra atro-viridis opaca costa media venisque primariis utrinsecus circ. 13 paullo sulcatis glaberrima sed pilorum juvenilium vestigiis plus minusve vestita (lamina juvenilis revoluta pilis plurimis floccosis breviter vel longius stipitatis vestita est), subtus pallidior olivacea minute glanduloso-punctulata costa media suberubescente elevata venis primariis haud prominulis venularum reti conspicuo ; petiolus circ. 2 cm. longus crassus pilis fasciatis et floccosis detersilibus plus minusve obtectus. Flores in umbellam veram strictam ad 8-floram dispositi rhachi inter bracteas pedicellosque pilis rufis sebaceis nunc apice rubro-glandulosis dense induta ; bracteae mox deciduae ; bracteolae lineares circ. 9 mm. longae vix 0.5 mm. latae acutae pilosae ; pedicelli ad 2.5 cm. longi olivacei floccis paucis brevibus pilosi et dense glanduloso-setulosi (glandulis ovoideis rubris longe stipitatis sebaceis saepe curvatis). Calyx ad 5 mm. longus cupularis extus dense glandulosus glandulis rubris stipitatis in lobos 5 inaequales (postero-laterales ovatos acutos ad 2.5 mm. longos anticos minutos semi-lunatos) divisus. Corolla alba roseo-suffusa campanulata ad 4 cm. longa utrinque glabra, lobis 5 rotundatis auriculatis crenulatis emarginatis circ. 1.5 cm. longis 2.5 cm. latis. Stamina 10 inaequalia longiora circ. 3 cm. longa breviora circ. 1.5 cm. longa, filamentis deorsum latioribus dense pubescentibus, antheris 2.5 mm. longis. Gynaeceum 3.5 cm. longum ; ovarium sursum attenuatum 7 mm. longum vix 2 mm. latum nigricans glandulis rubris ovoideis longe stipitatis adscendentibus dense vestitum ; stylus glaber sub stigmate lobulato vix latiore haud ampliatus.

Species *Rh. jucundo,* Balf. f. et W. W. Sm. et *Rh. rhaibocarpo,* Balf. f. et W. W. Sm. affinis, indumento et corolla 4 cm. longa intus glabra facile recognoscenda.

Mid. W. Yunnan. Western flank of the Tali Range. Alt. 11,000–12,000 ft. Lat. 25° 40′ N. Margins of pine forests. Shrub of 4–6 ft. Foliage aromatic. Flowers white

flushed rose or pale rose. G. Forrest. No. 11,577. July 1913.

A species of the Selense series, perhaps the largest flowered in it.

Rhododendron brevitubum, Balf. f. et Cooper.

Frutex circ. 2.5 m. altus. Ramuli recti rigidi paucifolii, annotini circ. 3 mm. diam. grisei subnitidi squamis peltatis discontiguis adpressis ex umbone brunneo institaque albida aedificatis lepidoti, seniores nitentes squamis desiccatis nigro-punctati. Alabastra foliorum ignota. Folia petiolata ad 12.5 cm. longa ; lamina coriacea elliptica vel elliptico-oblonga vel obovata ad 11.5 cm. longa ad 4.8 cm. lata apice obtusa tuberculo-mucronata margine cartilaginea plana deorsum paullo attenuata obtusa vel subcuneata, supra opaca viridis costa media sulcata venis primariis circ. 8 occultis glabra sed squamarum juvenilium vestigiis obscurissime notata, subtus cinnamomea costa media elevata conspersim lepidota venis primariis vix prominulis caeteroquin squamis peltatis biformibus discontiguis rufo-coloratis induta squamis ex umbone secretione rubra impleto et instita brunnea latiore integra constructis paucis majoribus conspersis, intervallis epidermicis glauco-viridibus quam squamis angustioribus et papillis petasiformibus numerosis vestitis ; petiolus ad 1 cm. longus rufus imbricatim lepidotus. Flores fragrantes in umbellas terminales 2–3-floras aggregati ; bracteae deciduae ignotae ; bracteolae filiformes circ. 6 mm. longae pedicellis breviores plus minusve adpresso-pilosae ; pedicelli vix 1 cm. longi furfuraceo-lepidoti. Calyx circ. 8 mm. longus, cupula circ. 3 mm. longa extus dense lepidota, lobis 5 inaequalibus ad 5 mm. longis 3 mm. latis membranaceis epilosis elepidotis vel (brevioribus) nunc leviter squameo-fimbriatis, longioribus elongato-triangularibus acutis brevioribus ovatis obtusis. Corollae pallide roseae extus lepidotae ad 4.5 cm. longae tubus brevis ad 1.5 cm. longus basi 5-gibbosus retusus intus puberulus sursum in limbum campanulatim explanatum 5-lobatum ampliatus, lobi rotundati undulati circ. 3 cm. longi 2.5 cm. lati. Stamina 20 inaequalia corolla breviora e tubo corollino longe exserta longiora circ. 3.5 cm. longa antheris 3 mm. longis breviora circ. 2.5 cm. longa antheris 3 mm. longis, filamentis filiformibus deorsum paullo expansis a basi 4–5 mm. nuda sursum fere ad medium puberulis. Discus perspicue puberulus. Gynaeceum corollam paullo superans circ. 5 cm. longum ; ovarium ovoideum in stylum attenuatum 4.5 mm. longum 3 mm. latum paullo sulcatum imbricatim rufo-lepidotum ; stylus crassus a basi sursum angustatus sub stigmate magno profuse lobulato paullo expansus fere ad medium lepidotus.

Species in sectionem Maddeni ponenda foliis subparvis, umbella pauciflora, pedicellis brevibus, calycis mediocris lobis elepidotis, corollae pallide roseae tubo brevi, staminum filamentis puberulis, stylo corolla longiore distinguenda.

Bhutan. Punakka. Alt. 6000–7000 ft. 8 ft. bush on steep dry hillside with pink and scented flower. R. E. Cooper. No. 3936. 27th May 1915.

Whether this plant may be the same as one of the forms of *Rh. Jenkinsii*, Nutt. allied to *Rh. Maddeni*, Hook. f. named by Nuttall * from Bhutan I will not discuss. It is possible that one or more of these forms found by Booth may be distinct species, but the descriptions are altogether insufficient to enable one to say what Booth's plants really were. Foliage alone in this series of rhododendrons is an unsafe guide to species unless leaf structure is examined microscopically—and neither the corolla nor stamens—critical characters in the series—of *Rh. Jenkinsii* and the forms included under it were known to Nuttall. Cooper's plant here described is a distinct one in the Maddeni series. The most easily seen diagnostic mark is the small corolla with short tube a little over a centimeter long. From *Rh. Maddeni* and from *Rh. calophyllum*, Nutt. it is distinguished also by the larger calyx and by the puberulous not glabrous stamens, and then the leaves are obtuse and relatively to length much wider. Like *Rh. manipurense*, Balf. f. et Watt in its stamens it has a smaller calyx and corolla and the foliage also is much smaller.

Mr. Cooper collected his plant in May and obtained no fruit, so that this species is one that remains to be introduced to cultivation by some future explorer.

4776 **Rhododendron callimorphum,** Balf. f. et W. W. Sm.

Frutex ad 3 m. altus plerumque pseudodichotome ramosus. Ramuli recti, annotini circ. 4 mm. diam. virides glandulis rubris crassis stipitatis obtecti, vetustiores grisei glandularum vestigiis verruculosi mox decorticantes. Alabastra ovoidea squamis fulvidis imbricatis obtecta. Folia petiolata ad 6.5 cm. longa; lamina coriacea rotundata vel late elliptica circ. 5 cm. longa 4 cm. lata apice corneo-mucronata margine cartilaginea basi cordulata vel subtruncatula lobis latis, supra atro-viridis nitida glabra sed vestigiis pilorum sebaceorum conspersa costa media venisque primariis utrinsecus ad 8 sulcatis, subtus glauca papillis ceriferis epidermicis petasiformibus obtecta et glandulis rubris pluribus conspersa costa media suberubescente elevata venis primariis et venarum reti intricato conspicuis haud elevatis; petiolus circ. 1.5 cm. longus 2 mm. diam. subrubidus glandulis

* Nuttall in Hook. Journ. Bot. v (1853), 361.

rubris stipitatis viscidus. Flores in umbellas ad 7-floras terminales dispositi; bracteae mox deciduae ignotae; bracteolae parvulae lineares circ. 5 mm. longae dense pilosae et glandulis rubris stipitatis praeditae; pedicelli stricti divaricati ad 2 cm. longi validi erubescentes glandulis rubris perspicue stipitatis dense instructi superne sub calyce oblique expansi. Calyx minutus circ. 1.5 mm. longus glandulis rubris longi-stipitatis vestitus, lobis 5 subaequalibus late triangularibus vel oblongis postero-lateralibus majoribus circ. 1 mm. longis. Corolla ad 3.5 cm. longa rosea basi postice extus bifoveolata intus varo basali kermesino notata a basi aperte campanulata 5-lobata extus glabra intus minutissime pulverulentim puberula, lobis rotundatis emarginatis circ. 1.2 cm. longis 1.8 cm. latis. Stamina 10 inaequalia 5 longiora ad 2.4 cm. longa 5 breviora ad 1.8 cm. longa, antheris circ. 2 mm. longis, filamentis albis teretibus deorsum latioribus primo intuitu glabris sed minutissime punctulatim puberulis. Discus viridis lobulatus glaber. Gynaeceum circ. 3.2 cm. longum corollam fere aequans staminibus longius; ovarium viride circ. 4 mm. longum glandulis capitatis rubris albo-stipitatis crebre adscendentibus dense obtectum; stylus flavo-viridis basi glandulis rubris stipitatis sparsim praeditus caeteroquin glaber sub stigmate parvo viridi et rubro-tincto lobulato paullo expansus et curvatus cupulam rubram faciens.

Species ex affinitate *Rh. Souliei*, Franch. a qua foliis subtus glandulis rubris pluribus praeditis, calycis lobis minoribus ex toto glanduliferis, corolla minus aperta, stylo glandulis sparsis basi solum notato inter alia differt.

W. Yunnan. Shweli-Salween divide. Alt. 10,000 ft. Lat. 25° 20′ N. Open rocky slopes. Shrub of 6–9 ft. Flowers rose. G. Forrest. No. 12,019. June 1913.

The foliage of this species recalls the charming *Rh. Souliei*, Franch. and it is a member of the Souliei series. Unfortunately Mr. Forrest's specimens are not abundant, and we have as yet inadequate material for a complete comparative analysis of the two species, but we have enough to bring out definite differences between them. *Rh. Souliei* is now a familiar plant of cultivation, thriving at Edinburgh in any situation, and *Rh. callimorphum*, introduced by Mr. J. C. Williams, has flowered (May 1917) and appears to be as desirable a species as *Rh. Souliei*. By the character of foliage the two plants are easily diagnosed. *Rh. callimorphum* has abundance of red glands appearing as minute dark points distributed over the under surface of the leaf and the petiole is clad with sessile globular glands. *Rh. Souliei* has no glands on the leaf under side and the petiole bears more or fewer stalked red glands which often extend to the margin of

the lamina at the base. Franchet* has it: "petiolo crasso 15 mm. longo, subtus glandulis consperso caeterum glabro," but I do not find such restriction of glandular surface in our cultivated plants. These glands tend to disappear as the leaf oldens but their traces remain visible. In the text accompanying the figure of *Rh. Souliei* in the Botanical Magazine (1915), t. 8622, there is an obvious misprint—the Latin diagnosis and description gives the lamina as eglandular whilst the English description says glandular. It is true that on the upper surface of the lamina as it opens from the bud there is a sprinkling of stalked red glands, but they have disappeared from the fully expanded lamina, which is eglandular both above and below. In the calyx characters there is much difference from *Rh. Souliei*, for we miss in *Rh. callimorphum* the large membranous gland-margined lobes of *Rh. Souliei* and find only small unequal glandular projections as is the case in *Rh. Williamsianum*. Then the style in *Rh. callimorphum* has long-stalked glands at the very base only and is not glandular throughout as in *Rh. Souliei*.

Rhododendron Cooperi, Balf. f.

Frutex epiphyticus circ. 1 m. altus. Ramuli hornotini tenues circ. 1 mm. diam. brunneo-purpurei foliorum rosulam apicalem et cataphylla membranacea ligulata setoso-ciliata inter se distantia gerentes lepidoto-furfuracei squamis peltatis pedicellatis ad 0.75 mm. latis plus minusve imbricatis facile detersilibus ex umbone plerumque rufescente et instita integra membranacea duplo latiore albido vel rufescente aedificatis, annotini subnitentes squamarum vestigiis notati, deinde grisei decorticantes. Alabastra foliorum ignota; folia juvenilia convoluta epilosa utrinque lepidota, supra squamis planis contiguis superficialibus mox detersilibus fere omnibus ex umbone rufescente institaque albida rufescente constructis, subtus squamis similibus densius aggregatis sed vix coloratis persistentibus grisea. Folia petiolata ad 11 cm. longa; lamina coriacea oblonga vel oblongo-elliptica vel subobovata ad 10 cm. longa ad 3 cm. lata apice obtusa nunc subrotundata perspicue corneo-mucronata margine plana basim versus paullo attenuata obtusa, supra olivacea vel subatro-viridis vix nitens glabra costa media anguste sulcata venis primariis utrinsecus circ. 8 inconspicuis caeteroquin subrugulosa et squamarum vestigiis notata, subtus cinnamomea costa media pallidiore elevata squamis brunneis conspersa, venis primariis et venularum reti indumento lepidoto biformi occultis, squamis latis contiguis vel fere contiguis ex umbone secretione kermesina impleta scintillante institaque brunneo-tincta aedificatis paucis majoribus longius stipitatis

* Franchet in Journ. de Bot. ix (1895), 351.

quasi papillis inter alias minores distributis ; petiolus ad 1 cm. longus crassus lepidoto-furfuraceus. Flores pauci 1–2 in umbellam veram terminalem dispositi, inflorescentiae rhachi lepidota ; bracteae et bracteolae mox deciduae ; pedicelli crassi decurvi circ. 6 mm. longi purpurei plus minusve furfuraceo-lepidoti squamis magnis albidis vel umbone rufescentibus. Calyx pro flore magnus ad 1 cm. longus, cupula subcarnosula circ. 2.5 mm. longa dense furfuraceo-lepidota squamis rufescentibus, lobis 5 oblongis ad 7.5 mm. longis et 4 mm. latis obtusis membranaceis virescentibus vel subrubris intus glabris extus lepidotis margine leviter ciliatis. Corolla carnosula rubra vel intus alba et extus pallide rosea circ. 2 cm. longa subrotata extus ubique lepidota, tubo lato circ. 8 mm. longo fauce dense villoso in limbum patentem expanso, limbi disco circ. 2 mm. lato, lobis 5 ellipticis vel oblongo-ellipticis apice rotundatis circ. 1 cm. longis et 8 mm. latis. Stamina 14 inaequalia e tubo corollae exserta longiora circ. 1.5 cm. longa breviora circ. 1 cm. longa, antheris brunneis magnis ad 4 mm. longis, filamentis crassis carnosulis basi latioribus supra basim glabram intra tubum corollinum dense villosis. Discus pubescens. Ovarium circ. 4 mm. longum petasiforme squamis albidis et subroseis dense lepidotum ; stylus validus circ. 1 cm. longus stamina subaequans deflexus glaber sub stigmate depresso discoideo paullo expansus quare labium cingens evenit.

Species *Rh. camelliaefloro,* Hook. f. affinis corollae fauce dense villosa certe distincta.

Bhutan. Ridang, Angduphorang. Alt. 9000 ft. Small bush. Epiphyte on big trees in moss. Flowers red. R. E. Cooper. No. 3959. 8.6.15.

Bhutan. Vatola Ridge, Tongsa. Alt. 9000–10,000 ft. Epiphytic bush 3–4 ft. on Abies. Flowers open, white inside, pink outside. R. E. Cooper. No. 4083. 1.7.15.

A species which appears to resemble closely *Rh. camelliaeflorum,* Hook. f., but the rose or red corolla villous at the throat is a sufficiently distinctive mark of difference. Nuttall described * briefly two species—*Rh. sparsiflorum* and *Rh. lucidum* —upon imperfect material collected by Booth in Bhutan which he regarded as nearly allied to *Rh. camelliaeflorum. Rh. sparsiflorum* is treated as a synonym of *Rh. camelliaeflorum* by C. B. Clarke,† who mentions (p. 475) *Rh. lucidum* as an imperfectly known species. There is the possibility that Cooper's plant may be one or other of Nuttall's species, but there is no certainty, for Nuttall's descriptions were taken from specimens not in flower and the flower character is a dominant one in *Rh. Cooperi.*

* Nuttall in Hooker's Journ. Bot. v (1853), 363.
† Clarke in Hook. f. Fl. Brit. Ind. iii (1882), 470.

Cooper obtained a third plant of this alliance in fruit only, the field ticket of which runs: "Parshong Timpu. Alt. 10,500 ft. Bush 6 ft. Golden glands under leaf. No. 3506. 29.10.14." The fruit and seed may be described thus: Capsula recta circ. 1 cm. longa circ. 8 mm. diam. fulva squamis scintillantibus lepidota calycis lobis adpressis basi inclusa ab apice valvis 5 dehiscens. Semina spadiceo-brunnea fusiformia exalata ad extremitates ambas aequaliter caudatim prolongata circ. 3 mm. longa (sine caudis 2 mm.). It has a strong resemblance to *Rh. Cooperi*, but there are slight differences in foliage that make me hesitate over identifying it with that species. It may be only *Rh. camelliaeflorum*. We have seedlings raised from seed taken from Cooper's specimens, and when they flower a decision of the point will be possible. If the plant is *Rh. Cooperi* the description of fruit which I have given will attach to the diagnosis of *Rh. Cooperi*.

4777 **Rhododendron croceum,** Balf. f. et W. W. Sm.

Frutex ad 7 m. altus. Ramuli hornotini (siccitate) nigri rubro-glandulosi glandulis globosis vel ovoideis sessilibus, annotini glandularum vestigiis notati rubido-virides subnitentes, vetustiores sordide grisei decorticantes. Alabastrorum ovoideorum fulvorum perulae extimae parvae oblongae brunneae coriaceae ad 7 mm. longae 3 mm. latae dorso eglandulosae haud viscidae apice rotundatae cum margine breviter glandulosae. interiores membranaceae flavido-virides ad 1.5 cm. longae circ. 3.5 mm. latae subligulatae apice acutae pilisque ciliatae. Folia petiolata ad 13 cm. longa plerumque breviora; lamina chartacea vel subcoriacea oblonga ad 11 cm. longa ad 6 cm. lata apice obtusa nunc rotundata corneo-mucronulata margine cartilaginea plana basi subtruncato-cordulata, supra atro-viridis costa media erubescente paullo sulcata venis primariis utrinsecus circ. 15 inconspicuis caeteroquin paulo rugulosa glabra subopaca pilorum juvenilium vestigiis plus minusve notata (in juventute revoluta pilis sebaceis contortis simplicibus vel ramosis floccosis subrubidis conspersa), subtus pallidior viridis vel olivacea vel fulvido-glaucescens costa media erubescente elevata venisque primariis rubidis impressis venularum reti conspicuo rubido superficie glandulis rubris punctulata (in juventute subcaesia venularum reti atro-purpureo pilis caulifloris plurimis rubidis vel luteis omnino obtecta); petiolus ad 2 cm. longus rubro-purpureus glaber (in juventute niger et pubescens). Flores in inflorescentiam racemoso-umbellatam ad 7-floram dispositi rhachi ad 1.5 cm. longa plus minusve rubro-glandulosa; bracteae exteriores crustaceo-coriaceae ad 1 cm. longae a basi subrotundatae circ. 5 mm. latae caudatae extus plus minusve

glandulosae et viscidae intus laete stramineae nitidae puberulae et pilis contortis sebaceis praeditae, interiores late ovatae circ. 7.5 mm. longae et ad 6 mm. latae cucullatae extus glandulosae viscidissimae; bracteolae mox deciduae; pedicelli purpurascentes vel atro-purpurei ad 4 cm. longi glandulis rubris breviter stipitatis plus minusve laxe vestiti ad apicem in calycis cupulam suboblique expansi ibique ceraceo-glauci et dense glandulosi. Calyx (persistens et sub fructu paulo auctus) grandis ad 1.3 cm. longus in limbum membranaceum flavido-viridem extus glandulis rubris breviter stipitatis conspersum inaequaliter irregulariterque 5-lobatum expansus, lobis postero-lateralibus ad 7.5 mm. longis et latis (nunc 5 mm.) anterioribus nunc 2.5 mm. margine glandulis capitatis vel ovoideis rubris albido-stipitatis semper lineatim ciliatis. Corolla carnosula lutea intus postice varo basali coccineo maculata a basi aperte campanulata vel subpateriformis ad 3.5 cm. longa extus plus minusve rubro-glandulosa intus glabra, lobis 5 semi-lunatis auriculatis emarginatis circ. 1.5 cm. longis 2.8 cm. latis. Stamina 10 inaequalia longiora ad 2 cm. longa breviora circ. 1 cm., filamentis deorsum latioribus glabris, antheris brunneis 2.5 mm. longis. Discus pubescens. Gynaeceum circ. 2.5 cm. longum corolla brevius staminibus longius; ovarium circ. 6 mm. longum nigro-purpureum glandulis rubris longistipitatis adscendentibus dense obtectum; stylus purpureus glandulis capitatis rubris sessilibus ex toto vestitus; stigma stylo latius subdisciforme lobulatum. Capsula nigra brevis et crassa paulo asymmetrica et curvata ad 2.2 cm. longa circ. 7 mm. diam. pilis setaceis fuscis glandula rubra terminatis praedita basi calyce obliquo spathaceo inclusa; semina albida linearia circ. 3 mm. longa ad extremitates caudato-arillata.

Species haec *Rh. Wardii*, W. W. Sm. valde affinis foliis oblongis obtusis nec rotundatis, inflorescentia racemoso-umbellata, calyce et corolla extus plus minusve rubro-glandulosis, ovario glandulis longistipitatis adscendentibus obtecto, capsula breviore recedens.

E.N.W. Yunnan. Mountains in the N.E. of the Yangtze bend. Alt. 12,000 ft. Lat. 27° 45′ N. In rhododendron thickets. Shrub of 14–20 ft. Flowers slightly fleshy, bright yellow with the faintest touch of crimson on interior base. G. Forrest. No. 10,428. July 1913. In full fruit. G. Forrest. No. 11,466. Oct. 1913.

E.N.W. Yunnan. Mountains of the Chungtien plateau. Alt. 11,000–12,000 ft. Lat. 27° 55′ N. In thickets. Shrub of 20–25 ft. Flowers fleshy, bright canary yellow. G. Forrest. No. 10,680. July 1913.

E.N.W. Yunnan. Mountains in the N.E. of the Yangtze bend. Lat. 27° 45′ N. Shrub of 15–20 ft. Flowers yellow. G. Forrest. No. 11,317. Sept. 1913.

E.N.W. Yunnan. Mountains west of Fengkow. Alt. 14,000 ft. Lat. 27° 40′ N. Flowers clear pure yellow. G. Forrest. No. 12,697. June 1914.

E.N.W. Yunnan. Mountains of the Chungtien plateau. Alt. 13,000 ft. Lat. 27° 30′ N. G. Forrest. No. 12,731. July 1914.

E.N.W. Yunnan. Kari Pass, Mekong-Yangtze divide. Alt. 13,000 ft. Lat. 27° 40′ N. In rhododendron and mixed thickets. Shrub of 9–16 ft. Flowers (yellow ?). G. Forrest. No. 12,969. Aug. 1914.

The rhododendron phylum which is represented on the Mekong-Salween Divide by *Rh. Wardii*, W. W. Sm. finds expression to the East on the Mekong-Yangtze divide, the Chungtien plateau, and in the N.E. of the Yangtze bend in the plant here described as *Rh. croceum*, which diverges so much—in some characters clearly in relation to the drier environment—that on the evidence it must be kept distinct from the western type. Mr. Forrest has specimens from several localities, and they all agree in the characters which differentiate *Rh. croceum* from *Rh. Wardii*, near one another though these plants are. We want more of the Mekong-Salween plant for completion of the differential diagnosis, but the following characters suffice for recognition of the two species :—

Rh. Wardii has adult leaves typically nearly elliptic with rounded summit in middle of which lies the horny mucro ; *Rh. croceum* has always oblong leaves which slightly taper at the apex into the mucro and are not usually rounded.

The inflorescence in *Rh. Wardii* is quite umbellate ; in *Rh. croceum* racemosely umbellate with a rhachis of about 1.5 cm. long.

The caudate outer bracts of *Rh. croceum* are not visible on any of the buds of *Rh. Wardii*.

Both the calyx lobes and the outside of the corolla in *Rh. croceum* are gland-dotted ; in *Rh. Wardii* the calyx is more sparingly glandular and the corolla is eglandular.

The ovary in *Rh. Wardii* has many almost sessile red glands covering it ; in *Rh. croceum* the glands which form an even denser covering to the ovary have long stalks and they are turned upwards to the top of the ovary.

The capsule in *Rh. Wardii* is shorter and thicker and is sprinkled with short glands ; in *Rh. croceum* the longer thinner capsule is densely covered with long-stalked glands.

Rh. croceum belongs to a type of rhododendron which is presented in several species throughout Western China and the adjoining countries and which also appears in the Himalaya. The general features of the series may be briefly stated thus :—

Shrubs or small trees bearing oblong rounded to orbicular leaves, obtuse or rounded at top, rounded or cordate at base, when mature usually convex above and often coated there with wax bloom and showing the submerged reticulate venation conspicuously on the under side, more or less glabrous but with vestiges particularly below and on the petiole of juvenile short-stalked glands or sebaceous hairs; pedicels glandular; calyx large or small glandular; corolla 5-lobed open campanulate or deep saucer-shaped glabrous inside; stamens 10 unequal glabrous or puberulous; ovary glandular and style glandular. The following table gives the names and distribution (with name of the discoverer) of the species that seem to fall into the series :—

Rh. Bonvaloti, Bur. et Franch. (1891).	W. Szechwan: Tatsienlu. (Pr. Henri d'Orleans and Bonvalot.)
Rh. callimorphum, Balf. f. et W. W. Sm. (1917).	W. Yunnan: Shweli-Salween divide, 10,000 ft. (Forrest.)
Rh. campylocarpum, Hook. f. (1849).	Sikkim: Bhutan, 11,000–14,000 ft. (Hooker f.)
Rh. cordatum, Léveillé (1914).	N.E. Szechwan: Io Chow, 10,500 ft. (Maire.)
Rh. croceum, Balf. f. et W. W. Sm. (1917).	E.N.W. Yunnan: In N.E. of Yangtze bend, 11,000–14,000 ft. (Forrest.)
Rh. dasycladum, Balf. f. et W. W. Sm. (1917).	E.N.W. Yunnan: In N.E. of Yangtze bend, 12,000 ft. (Forrest.)
Rh. puralbum, Balf. f. et W. W. Sm. (1916).	E.N.W. Yunnan: In N.E. of Yangtze bend, 11,000–14,000 ft. (Forrest.)
Rh. Souliei, Franch. (1895).	W. Szechwan: Tatsienlu, 10,000–12,000 ft. (Soulié.)
Rh. Wardii, W. W. Sm. (1914).	S.E. Tibet: Doker La, 13,000–14,000 ft. (Ward.)
Rh. Williamsianum, Rehd. et Wils. (1913).	W. Szechwan: Wa-shan, S.E. of Tatsienlu, 8000 ft. (Wilson.)

If this be a natural phylum its name should be Campylocarpum after the longest known species. I say if, because whilst the species have a marked resemblance and have more or less developed the technical character of a glandular style, the longer thin curved capsule of *Rh. campylocarpum* is very different from the short more nearly straight capsule of *Rh. Wardii* and *Rh. Williamsianum*, and those are the only fruits I

know in the series. I do not however know at what value to appraise fruit and seed character in rhododendron, for I have seen too few of them in fruit.

I may note here that there is another series of rhododendrons with somewhat similar distribution to which may be given the name of Selense, presenting general features very like those of the Campylocarpum series but distinguished at once by a glabrous style on top of the glandular ovary. The species belonging to it are :—

Rh. blandulum, Balf. f. et W. W. Sm. (1917).	Mid. W. Yunnan : Tali Range, Western flank, 11,000–12,000 ft. (Forrest.)
Rh. Fargesii, Franch. (1895).	E. Szechwan : Chenkow (Farges.) W. Hupeh, 6500–9500 ft. (Wilson.)
Rh. jucundum, Balf. f. et W. W. Sm. (1916).	Mid. W. Yunnan : Tali Range, Western and Eastern flank, 10,000–12,000 ft. (Forrest.)
Rh. pagophilum, Balf. f. et Ward (1916).	S.E. Tibet : Doker La and Ka-gwr-pw Glacier Valley, 14,000–16,000 ft. (Ward.)
Rh. panteumorphum, Balf. f. et W. W. Sm. (1916).	W.N.W. Yunnan : Mekong-Salween divide, 11,000–12,000 ft. (Forrest.)
Rh. rhaibocarpum, Balf. f. et W. W. Sm. (1917).	E.N.W. Yunnan : Mekong-Yangtze divide and Chung-tien plateau, 11,000–12,000 ft. (Forrest.)
Rh. selense, Franch. (1898).	W.N.W. Yunnan : Mekong-Salween divide, Mt. Sela. (Soulié.)
Rh. Stewartianum, Diels (1912).	W.N.W. Yunnan : Mekong-Salween divide, 10,000–11,000 ft. (Forrest.)

In the Selense series there appears the same contrast in fruits as in the Souliei series. *Rh. rhaibocarpum* has a capsule in all characters like that of *Rh. campylocarpum* and it contrasts with the short, nearly straight capsule of *Rh. Souliei*.

It is convenient for the time to segregate these species in the series I have named and thus to link together some of the now numerous species of rhododendron. But I think that hereafter it may be found that natural relationships call for a regrouping of the species, and that they all belong to and may be arranged by their affinities within a series for which we may

take the name Thomsoni, after the well-known Himalayan *Rh. Thomsoni*. At present I take the Thomsoni series as a separate one distributed in the Himalaya and Western China, and distinguished by the tubular campanulate corolla and the usually glabrous ovary and glabrous style, whilst in foliage and other characters its species closely resemble some of those of the Campylocarpum series and approach the Selense series. The Thomsoni series I speak of includes :—

Rh. candelabrum, Hook. f. (1849).	Sikkim, 10,000–11,000 ft. (Hooker f.)
Rh. cyanocarpum, Franch. (1895).	Mid. W. Yunnan : Tali, 10–12,000 ft. (Delavay.)
Rh. eriphyllum, Balf. f. et W. W. Sm. (1917).	Mid. W. Yunnan, 11,000 ft. (Forrest.)
Rh. Hookeri, Nutt. (1853).	Bhutan, 8000–9000 ft. (Booth.)
Rh. rotundifolium, David (1872).	W. Szechwan : Muping, 12,500 ft. (David.)
Rh. Thomsoni, Hook. f. (1849).	Sikkim, 11,000–13,000 ft. (Hooker f.)

In support of the suggestion that all the species here named belong to one phylum and that their separation in the three series of Campylocarpum, Selense, Thomsoni is more artificial than natural, I would point out that the gland coating of the gynaeceum—the chief technical diagnostic mark of the series—shows some variation. *Rh. callimorphum* and *Rh. dasycladum* of the Campylocarpum series have the glands confined to the base of the style and not covering the whole—a step as it were towards the glabrous style of the Selense series. And then *Rh. candelabrum* and *Rh. eriphyllum* are microforms respectively of *Rh. Thomsoni* and *Rh. cyanocarpum* and in them the ovary has some glands and shows thus a step towards the completely glandular ovary in the Selense and Campylocarpum series. It is of special interest to note that this variation occurs in both the Himalayan and the Yunnan representative species.

Rhododendron dasycladum, Balf. f. et W. W. Sm.

Frutex ad 3 m. altus tenuiter ramosus ramis strictis. Ramuli hornotini circ. 2 mm. diam. nigricantes indumento heteromorpho fulvido viscido vestiti, indumento e setulis sebaceis glandulis rubidis clavatis vel capitatis terminatis et e pilis breviter stipitatis similiter glandulosis etiam e pilis floccosis sebaceis eglandulosis vix stipitatis multo radiatimque ramosis vel longius

stipitatis et fasciatim ramosis composito, post annos duos vel tres glabrescentes deinde grisei decorticantes. Alabastrorum subfloralium lateralium oblongorum acutorum perulae exteriores crustaceae brunneae rotundatae circ. 3 mm. longae extus intusque puberulae tenuissime ciliatae, interiores flavidae elongato-oblongae acutae circ. 1.5 cm. longae 4 mm. latae membranaceae plus minusve puberulae et glandulosae ciliatae, intimae saepe longiores viridescentes. Folia petiolata ad 10 cm. longa ; lamina coriacea oblonga nunc oblongo-elliptica ad 8 cm. longa 3.8 cm. lata in triente supero sursum attenuata tuberculo corneo terminata margine plana anguste cartilaginea basi cordulata lobis rotundatis, supra opaca olivacea costa media paullo sulcata erubescente sparsim puberula venis primariis utrinsecus circ. 13 indistinctis superficie caeteroquin in modum squali corii rugulosa et glaberrima sed indumenti juvenilis vestigiis notata, subtus pallidior costa media elevata erubescente glabra vel ad basim rubro-glandulosa venis primariis immersis et venularum reti subpurpureo immerso ubique glandulis rubris sparsis et pilis plurimis sebaceis solitariis vel floccosis vel cauliflоris aurantiacis vel rubris punctulata (in juventute utrinque dense rubro-glandulosa et colorato-floccosa) ; petiolus circ. 2 cm. longus supra canaliculatus (sulco pube plus minusve impleto) nigro-purpureus primo setuloso-glandulosus et floccosus vel glandulis brevioribus indutus deinde glabrescens. Flores in umbellam ad 8-floram dispositi ; bracteae deciduae ignotae ; bracteolae circ. 1.5 cm. longae lineares albido-pilosae ; pedicelli purpurei glandulis rubris longe et breviter stipitatis viscidi circ. 1.7 cm. longi ad apicem obliqui. Calyx parvus circ. 1.5 mm. longus cupularis 5-lobatus, lobis inaequalibus postero-lateralibus majoribus rotundatis dense glandulosis glandulis ex parte maxima breviter stipitatis nunc longius. Corolla rosea ? infundibuliformis 3 cm. longa extus plus minusve glandulosa intus basi puberula, lobis 5 circ. 1 cm. longis 1.5 cm. latis rotundatis emarginatis undulatis. Stamina 10 inaequalia longiora circ. 3 cm. longa breviora 2 cm., filamentis purpureis supra basim et infra medium pubescentibus, antheris magnis 4 mm. longis. Gynaeceum circ. 3.7 cm. longum ; ovarium tenue sursum attenuatum 7 mm. longum glandulis rubris breviter stipitatis dense vestitum vertice pilorum crista coronatum ; stylus longus corollam staminaque superans basi plus minusve rubro-glandulosus sub stigmate discoideo lobulato haud ampliatus.

Species *Rh. rhaibocarpo*, Balf. f. et W. W. Sm. valde affinis sed foliis longioribus, corolla extus glandulosa, stylo basi glanduloso differt.

E.N.W. Yunnan. Mountains in the N.E. of the Yangtze bend. Alt. 12,000 ft. Lat. 27° 45′ N. In open thickets.

Shrub of 6–10 ft. Flowers probably rose. G. Forrest. No. 10,430. July 1913.

This fine plant is of special interest, because whilst resembling in many characters the rhododendrons of the series that centre around *Rh. selense*, Franch., it differs from them in its character of glandular style, which takes it nearer those of the Souliei series, from which series it is excluded by the shape of its corolla. Its nearest ally is certainly *Rh. rhaibocarpum*, Balf. f. et W. W. Sm. They are members of a complex of which Mr. Forrest has collected other members, but not in complete enough state to supply material for estimation of their relationship and title to specific rank. The special attention he will give to that group during his present exploration of Yunnan will furnish data, I hope, which will show us more than one new species in this beautiful set of rhododendrons.

Rhododendron diaprepes, Balf. f. et W. W. Sm.

Frutex ad 3 m. altus. Ramuli annotini glaberrimi crassi circ. 7 mm. diam. recti virides nitentes. Alabastra terminalia ignota. Folia petiolata ad 22 cm. longa; lamina coriacea elliptico-oblonga ad 19 cm. longa 8 cm. lata apice rotundata mucronata margine cartilaginea basi plerumque obliqua lobis subrotundatis nunc subauriculatis subdecurrentibus, supra glaberrima subnitenti-viridis costa media parum sulcata venis primariis utrinsecus ad 22 et nervulorum reticulo (in sicco) paullo elevatis, subtus pallidior sublutescens vel glaucescens papillis ceriferis epidermicis petasiformibus ex toto obtecta et glandulis rubris sebaceis punctulata costa media straminea elevata venis primariis paullo prominulis reticulo ultimo obscurato; petiolus circ. 3 cm. longus viridis glaber subnitens. Flores fragrantes magni inter se distantes in umbellam breviter racemosam ad 7-floram terminalem dispositi inflorescentiae rhachi vix 1.5 cm. longa plus minusve rubro-glandulosa; bracteae ignotae; bracteolae parvae lineari-subulatae circ. 5 mm. longae albido-hirsutae; pedicelli circ. 3.5 cm. longi crassi stricti epilosi rubro-glandulosi glandulis parvulis brevissime stipitatis nunc glabrescentes superne in calycis cupulam oblique dilatati. Calycis plus minusve rubro-glandulosi cupula brevis in limbum circ. 5 mm. longum tenuiter coriaceum inaequaliter et irregulariter lobulatum expansa, lobis integris vel laceratis et margine plus minusve ciliatis vel glandulosis. Corolla alba extus roseo-suffusa circ. 10.5 cm. longa e tubo infundibuliformi in limbum tubatum 7-lobatum explanata, tubo extus epiloso eglanduloso intus pubescente, lobis rotundatis emarginatis nunc subcrenulato-undulatis circ. 3 cm. longis 4 cm. latis. Stamina ad 18 inaequalia longiora circ. 7.5 cm. breviora circ. 5 cm., filamentis

basi latioribus et pubescentibus sursum filiformibus, antheris circ. 4 mm. longis. Gynaeceum circ. 10 cm. longum corolla paullo brevius; ovarium nigro-purpureum conoideum circ. 1 cm. longum glandulis luteis breviter stipitatis dense obtectum; stylus glandulis luteis breviter stipitatis ex toto praeditus sub stigmate late lobulato curvatus et dilatatus.

Species *Rh. discolori*, Franch. affinis sed foliis latioribus brevioribusque apice rotundatis, inflorescentiae rhachi breviore, corolla majore, staminum filamentis pubescentibus recognoscenda.

W. Yunnan. Shweli-Salween divide. Alt. 9000 ft. Lat. 25° 10′ N. Margins of mixed forests. Shrub of 10 ft. Flowers fragrant white flushed rose exterior. G. Forrest. No. 11,958. June 1913.

A species with flowers about a third larger than those of *Rh. discolor*, Franch., to which it is nearly allied. The two species are quite distinct. *Rh. discolor* has narrower and longer leaves which are pointed at the tip and the whiter under surface wants the red glands which punctulate the leaf in *Rh. diaprepes*. The pale colouration of the leaf under-surface in both species is due to the dome-shaped epidermal papillae coated with wax. Then *Rh. discolor* has a really racemose inflorescence the rhachis of which is as much as 4 cm. in length whilst in *Rh. diaprepes* the flowers are distant on a rhachis only 1.5 cm. long. Franchet describes the pedicels in *Rh. discolor* as quite glabrous—were that constant it would readily differentiate the species from *Rh. diaprepes* where they are always glandular. But Rehder and Wilson say that the pedicels are "occasionally sparsely glandular" in *Rh. discolor*, and Wilson's specimens—Nos. 586 and 1077—bear out their statement. In both of these the pedicels are glandular. In addition to the size of flower the very pubescent stamens of *Rh. diaprepes* separate it from *Rh. discolor*, where they are glabrous. From *Rh. rasile*, Balf. f. et W. W. Sm. the absence of glands from the outside of the corolla readily distinguishes *Rh. diaprepes*.

Rhododendron eriogynum, Balf. f. et W. W. Sm.

Frutex ad 3 m. altus ramis validis strictis erectis pauciramosis. Ramuli annotini circ. 4 mm. diam. erubescentes glauci glabri vetustiores grisei decorticantes. Alabastrorum fusiformium circ. 2 cm. longorum 7 mm. diam. perulae exteriores rufo-brunneae crustaceae rotundatae ecarinatae emucronulatae extus centro floccosae et glandulosae fimbriato-ciliatae, intimae ligulato-spathulatae flavido-brunneae circ. 2 cm. longae et 5 mm. latae submembranaceae apice truncatae saepe emarginatae extus floccoso-pubescentes et glandulosae intus fere glabrae

margine floccosae et glanduloso-ciliatae ; folia juvenilia revoluta ubique pilis floccosis adpressis glandulas pauciores obtegentibus tomentosa. Folia petiolata ad 16 cm. longa ; lamina crasse coriacea lanceolata vel oblongo-lanceolata utrinque angustata ad 13.5 cm. longa ad 6 cm. lata apice acuta rubro-mucronata margine plana cartilaginea basi obtusa vel late cuneata, supra viridis glabra squali corium subsimulans (in siccitate), pilorum glandularumque juvenilium cicatricibus obscure notata costa media anguste sulcata venis primariis utrinsecus circ. 16 obscure sulcatis, infra pallidior glabrescens glandularum pilorumque detersilium pedibus punctulata costa media erubescente elevata venis primariis venulisque ultimis purpureis immersis ; petiolus crassus circ. 2.5 cm. longus erubescens subglaucus corrugatus supra sulcatus. Flores in umbellas compactas terminales paucifloras aggregati ; bracteae intimae fertiles late spathulatae circ. 1.7 cm. longae et 9 mm. latae subtruncatae mucronatae extus intusque pilis longis albidis adpressis dense vestitae ; bracteolae circ. 4 mm. longae clavatae dense pilosae ; pedicelli circ. 6 mm. longi validi glandulosi et pubescentes. Calyx cupularis circ. 4.5 mm. longus, cupula extus floccosa et glandulosa, lobis triangularibus submembranaceis circ. 3 mm. longis copiose glandulosis margine glanduloso-fimbriatis. Corolla kermesina postice multimaculata circ. 2.5 cm. longa tubuloso-campanulata subcarnosula extus intusque glabra 5-lobata, lobis rotundatis circ. 1.2 cm. longis et latis integris subpatentibus. Stamina 10 corolla breviora inaequalia longiora circ. 2 cm. longa antheris atro-purpureis subovoideis circ. 1.75 mm. longis, breviora circ. 1.4 cm. longa antheris circ. 1.25 mm. longis, filamentis subcrassis ab ima basi ad medium vel ultra pubescentibus. Discus pubescens. Gynaeceum corollam fere aequans ; ovarium cylindricum sulcatum circ. 4.5 mm. longum pilis floccosis dense tomentosum eglandulosum ; stylus circ. 2 cm. longus sub stigmate haud clavatus fere ad apicem dense floccoso-tomentosus ex toto glandulosus glandulis crassis rugulosis aurantiacis baculiformibus sub tomento stratum facientibus (apice etomentoso excepto), floccorum stipite crasso apice pilos plurimos unicellulares strictos divaricatos congestos gerente ; stigma atro-purpureum lobulatum stylo haud latius.

Species *Rh. faceto*, Balf. f. et Ward affinis, foliis lanceolatis crassioribus, pedicellis brevioribus, corolla et staminibus dimidio minoribus dignoscenda.

Mid. W. Yunnan. Ghi-shan. East of Tali Lake. Open thickets. Alt. 9000 ft. Lat. 25° 48′ N. Shrub of 10 ft. Flowers crimson. G. Forrest. No. 13,508. July 1914.

This species with its compact truss of small crimson flowers borne at the end of stout twigs—much in the same form as in

Rh. niveum—should be a valuable garden plant. It is now in cultivation from seeds collected by Mr. Forrest.

The species is apparently one of the Irroratum series. The material for examination is not abundant and I had not appreciated the true affinity of the plant when I dealt with the Irroratum series (see Trans. Bot. Soc. Edin., vol. xxvii (1916–1917), 157.

Rhododendron euanthum, Balf. f. et W. W. Sm.

Frutex 3–6 m. altus. Ramuli hornotini glauco-purpurei glandulis breviter stipitatis rubris conspersi, seniores albido-grisei glandularum vestigiis obscure notati. Alabastra ignota. Folia longe petiolata ad 10 cm. longa; lamina chartaceo-coriacea oblongo-elliptica ad 7.5 cm. longa 3.7 cm. lata apice obtusa tuberculo-mucronata margine cartilaginea plana basi glandulis vel earum vestigiis obsita basi rotundata vel late obtusa vel subtruncatula nec cordulata plerumque inaequilateralis, supra viridis opaca costa media erubescente paullo sulcata venis primariis utrinsecus ad 14 haud prominulis glabra sed pedibus glandularum obscure notata interdum in foliis junioribus praecipue ad basim circa costam mediam glandulis rubris sparsissime conspersa, subtus pallide fulva glabra costa media elevata venis primariis et venularum reti conspicuis sed haud elevatis papillis epidermicis petasiformibus inter venulas areolata; petiolus ad 2.5 cm. longus validus erubescens supra sulcatus glandulis rubris plus minusve conspersus. Flores racemoso-umbellati; umbella terminalis ad 12-flora rhachi ad 1 cm. longa puberula et rubro-glandulosa; bracteae bracteolaeque mox deciduae ignotae; pedicelli circ. 3 cm. longi recti rigidi rubidi rubro-glandulosi et obscure puberuli apice sub calyce oblique explanati. Calyx parvus circ. 3 mm. longus carnosulus ad medium 7-lobatus, lobis irregularibus rotundatis vel semilunatis rubro-glandulosis. Corolla rosea vel roseo-lavendulacea kermesino-maculata aperto-campanulata ad 5 cm. longa tenuis extus intusque glabra 7-lobata, lobis explanatis circ. 2.5 cm. longis 3 cm. latis rotundatis emarginatis. Stamina 14 inaequalia longiora circ. 3 cm. longa antheris circ. 3.5 mm. longis breviora circ. 2.2 cm. longa antheris 2.5 mm. longis, filamentis deorsum latioribus glabris. Discus brevissime puberulus. Gynaeceum circ. 4 cm. longum corolla brevius stamina superans; ovarium circ. 7 mm. longum conoideum truncatum dense rubro-glandulosum glandulis breviter albido-stipitatis; stylus validus glandulis rubris capitatis breviter stipitatis ex toto obtectus sub stigmate discoideo-lobulato labio stylari cincto expansus.

Species haec *Rh. Souliei,* Franch. affinis foliis chartaceo-coriaceis haud cordulatis, calyce parvo carnosulo ubique

glanduloso, corolla profundius concava majore, staminibus 14, ovarii glandulis clare stipitatis recedens.

E.N.E. Yunnan. Western flank of the Lichiang Range. In rhododendron forests. Alt. 11,000–12,000 ft. Lat. 27° 30′ N. Shrub or tree of 15–20 ft. Flowers bright rose with crimson markings. G. Forrest. No. 5880. June 1910.

E.N.E. Yunnan. Eastern flank of the Lichiang Range. Open situations on the margins of pine forests. Alt. 11,000 ft. Lat. 27° 20′ N. Shrub of 10–20 ft. Flowers rose-lavender with crimson markings. G. Forrest. No. 5881. June 1910.

This is a fine species and should be an ornamental plant in gardens. It has been raised from seeds collected by Mr. Forrest under No. 5881 for Bees Ltd. but has not yet flowered in cultivation.

It has all the aspect of plants of the Selense and Souliei series. Its style, glandular throughout, denies it a place in the Selense series. Of the members of the Souliei series the species nearest to it are *Rh. callimorphum*, Balf. f. et W. W. Sm., *Rh. puralbum*, Balf. f. et Ward, and *Rh. Souliei*, Franch., but they are easily distinguished. It recalls by its foliage *Rh. puralbum*, Balf. f. et Ward, but that species has a pure white corolla, large membranous calyx glandular at margin only, and puberulous staminal filaments. *Rh. callimorphum*, Balf. f. et W. W. Sm. has cordulate leaves and puberulous staminal filaments. *Rh. Souliei*, Franch. has also cordulate leaves and the calyx is large and membranous.

The 7-lobed corolla and 14 stamens suggest the Fortunei series as its affinity, but the leaf form is hardly that of the series and the character of the under-leaf surface is entirely that of *Rh. Souliei*.

Rhododendron facetum, Balf. f. et Ward.

Arbor parva tenuis 5–6 m. alta. Ramuli annotini purpurei 3 mm. diam. stricti plus minusve floccoso-tomentosi et glandulosi, floccis stipitatis stipite longo ad apicem ramulis brevibus rectis acutis radiatis plus minusve sebaceis coronato, glandulis sebaceis stipitatis, glabrescentes, seniores calvi pallide cinnamomei. Alabastra foliorum ignota. Folia petiolata ad 21 cm. longa ; lamina chartaceo-coriacea oblonga vel oblanceolata ad 19 cm. longa 5.5 cm. lata apice breviter subrostratim acuta margine cartilaginea obscure undulata vix recurva pilorum detersilium pedibus notata deorsum attenuata basi late cuneata nunc inaequilateralis, supra opaca haud nitens olivacea glaberrima plana costa media paullo sulcata sulco nudo venis primariis utrinsecus circ. 14 occultis, subtus rubido-brunnea subnitens glaberrima ubique pedibus glandularum vel pilorum detersilium

minute rubro-punctulata costa media elevata rubra venis primariis venularumque reti paullo prominulis rubris ; petiolus ad 2 cm. longus crassus purpureus supra sulcatus corrugatus glabrescens floccorum vestigiis plus minusve indutus. Flores racemoso-umbellati circ. 8 in quaque inflorescentia, rhachi brevi circ. 1.3 cm. longa floccosa et glandulosa ; bracteae mox deciduae ignotae ; bracteolae parvae circ. 5 mm. longae pedicellis multo breviores filiformes pilosae ; pedicelli 1.3 cm. longi floccosi et glandulosi glabrescentes. Calyx ad 5 mm. longus carnosulus ad medium 5-lobatus, cupula dense floccosa et glandulosa, lobis semilunatis vel late triangularibus margine integris vel subfimbriatis dorso glabris vel plus minusve glandulosis. Corolla coccinea tubuloso-campanulata circ. 4.5 cm. longa, tubo postice varo parvo notato et maculato basi 5-retuso-gibboso intus glabro et septis petalinis imperfectis diviso extus basi nunc floccis consperso, lobis brevibus circ. 1.5 cm. longis 2 cm. latis emarginatis. Stamina 10 inaequalia longiora circ. 3.7 cm. longa antheris atro-purpurèis 3.5 mm. longis breviora circ. 2.7 cm. longa antheris 2.5 mm. longis, filamentis deorsum dilatatis ab ima basi ad medium vel ultra pubescentibus. Discus superne puberulus. Gynaeceum circ. 4.5 cm. longum corollam aequans ; ovarium conoideum circ. 9 mm. longum sulcatum nigricans eglandulosum strato crasso denso pilorum scopiformium floccosorum obtectum ; stylus pilis similibus et glandulis rubris clavatis longe stipitatis dense vestitus basim versus pilis numerosissimis, apicem versus glandulis dominantibus, sub stigmate parvo lobulato haud dilatatus.

Species in gregem Irroratum ponenda ramis glandulosis floccigerisque, foliis longis chartaceo-coriaceis lanceolatis supra opacis infra subnitentibus, petiolo floccoso, floribus racemoso-umbellatis, inflorescentiae rhachi pedicellisque calycibusque glandulosis et floccigeris, corolla tubuloso-campanulata 5-lobata coccinea variculosa maculata intus et plerumque extus glabra, staminibus 10 ad medium vel ultra pubescentibus eglandulosis, ovario dense tomentoso, stylo glanduloso et floccigero notata.

E. Burma. Feng-shin-ling Camp. 8000–9000 ft. Tree of 15–20 ft. of slender growth in rain forest. Flowers scarlet, in small trusses, just coming into flower. F. Kingdon Ward. No. 1569. 9th Jan. 1914.

A species of the Irroratum series marked by its floccose and glandular twigs with large leaves, the under side of which is made somewhat glossy by a wax-coating. The 5-lobed corolla is glabrous inside and out but sometimes is slightly floccose at the base outside, the 10 stamens are pubescent to the middle and beyond it, and the floccose-tomentose ovary bears a glandular and floccose style. These characters separate it from other

species of the series. The conspicuous style-character is shared by *Rh. pogonostylum*, Balf. f. et W. W. Sm. alone in the series, and in that species perhaps *Rh. facetum* finds its nearest ally. The corolla hairy on the outside in *Rh. pogonostylum* and the glands beneath the tomentum on the ovary separate it readily.

Rh. facetum carries farther westwards into Burma the distribution of the Irroratum series. *Rh. tanastylum*, Balf. f. et Ward found at Hpimaw is the only species outside Yunnan hitherto assigned to the series, which occupies a much wider geographical area than I knew of when I read an account of the series before the Botanical Society of Edinburgh in 1917. I have since that date found amongst collections made by Mr. R. E. Cooper in Bhutan specimens under Nos. 4086, 4160, 4978 of *Rh. Kendrickii*, Nutt. corresponding in all respects with Mr. Griffith's Bhutan specimens of the species under No. 2235. Analysis of the new Bhutan material of this little-known species suggests that *Rh. Kendrickii* is an Eastern Himalayan representative of the West Chinese forms assembled in the series Irroratum. Nuttall,* and following him C. B. Clarke,† thought the affinity of *Rh. Kendrickii* was with *Rh. arboreum*, Sm., from which it differed, as Clarke says, "by the very narrow capsule." The general outward resemblance of dried specimens of *Rh. Kendrickii* to those of *Rh. arboreum* naturally tempts to the

*** Nuttall's description runs :—**

Rhododendron Kendrickii.—Frutex ramosus; foliis oblongo-lanceolatis, acuminatis, glabris, concoloribus, margine leviter undulatis, junioribus pubescentibus; corymbis multifloris; laciniis calycinis minutis, acuminatis; (staminibus 10 ?) filamentis glabris; capsulis arcuatis, glabris, 6-locularibus; seminibus lanceolatis, utrinque acutis.

Mountains of Bootan (Mr. Booth). About 7000 ft. elevation, accompanying *Rh. Edgeworthii*, and found lower down than *Rh. Hookeri* and *Rh. Falconeri*, but above *Rh. serotinum*.

This fine species, having some affinity with *Rh. arboreum*, forms lofty thickets (after the manner of *Rh. ponticum*), through which the traveller finds dark and difficult paths. The stem attains the diameter of 7 or 8 inches, with a smooth pale bark. The leaves, 4 to 6 inches long, are scarcely more than an inch wide, elegantly waved on the margin in small plaits, so as to appear almost crenate, disposed partly in whorls, equally green and smooth on both surfaces when adult, the petiole less than half an inch in length; the young leaves and stems, in young plants, more or less clothed with reddish glutinous hairs; beneath, shining, with the pubescence chiefly confined to the midrib. Flower-cone oval, the scales smooth, rounded and obtuse; innermost scales or bracts silky. Corymb 10- to 12-flowered. Flowers large, deep red. Stamens 10 ? smooth. Stigma 5-lobed. Calyx small, as in *Rh. arboreum*, the segments broad, ovate, acuminate. Capsule 1 to 1¼ inch long, incurved, 6-celled, smooth and dark brown. Seeds small, darkish brown, lanceolate, oblique, acute at both extremities.

It grows promiscuously with the very hardy *Pinus excelsa*, and with several kinds of undescribed oaks. Found to be hardy in the climate of England. Fresh flowers have not yet been seen, but from the appearance of dried fragments they seem to be of a deep red.

According to the herbarium of my friend Sir William Hooker, it appears that this species was observed in Bootan by the late Mr. Griffith. The specimens referred to are branches without flowers or fruit.

Dedicated to the memory of my much-revered friend and botanist, the late Dr Kendrick of Warrington.

† In Hook. f. Fl. Brit. Ind. iii (1882), 466.

association of the two species. My overlooking Cooper's specimens when dealing with the Irroratums of W. China was a consequence of my placing them at a first sorting amongst forms of *Rh. arboreum*. But *Rh. arboreum* and *Rh. Kendrickii* assuredly belong to different phyla. The whole indumentum and other characters of the Arboreum series typified in *Rh. arboreum* are different from those of *Rh. Kendrickii*, which conform with those of *Rh. irroratum*, Franch. and its allies.

Rh. Kendrickii is not common in cultivation. We have no plant at Edinburgh notwithstanding endeavours to obtain it. Nuttall's description * is very slight, and that in the Botanical Magazine is derived from a cultivated plant. I therefore give here for reference an account of the plant based upon Cooper's Bhutan specimens :—

Rh. Kendrickii, Nutt. in Ann. Mag. Nat. Hist. xii (1853), 10 ; id. in Hook. Journ. Bot. v (1853), 358.

Rh. Kendrickii var. *latifolium*, Hook. Bot. Mag. (1859), t. 5129.

Shrub 6–8 m. high of spare habit. Branches stiff straight divaricate epilose about 2 mm. in diam. when a year old, reddish soon becoming whitish-grey and shedding the cortex. Leaf-buds ovoid blunt, bud-scales rounded brown crustaceous carinate mucronulate ciliate glabrous or with a few dorsal hairs. Leaves few petiolate about 14 cm. long ; lamina firm coriaceous as much as 13 cm. long and 3 cm. broad oblong-lanceolate or lanceolate acuminate ending in a tuberculate mucro, margin broadly cartilaginous recurved undulate slightly warted by vestiges of fallen glands and hairs, base narrowly cuneate ; upper surface smooth olive-green paler beneath, on both sides glabrous but marked by scars of fallen hairs and glands sometimes on under surface a few red glands persist, midrib often slightly reddened deeply grooved above raised beneath, primary veins 20 or more on each side hardly visible above slightly raised beneath where ultimate reticulation is conspicuous (when dry) ; petiole at most 1 cm. long wrinkled glabrous somewhat furfuraceous. Inflorescence of many (15 or more) flowers in a raceme, rhachis as much as 4 cm. long glandular and densely adpressedly tomentose the hairs greasy pale-coloured floccose ; outer bracts rounded hooded hardly keeled crustaceous 1.5 cm. or more long 1 cm. or more broad, outside densely adpressedly floccose-tomentose, inside red-glandular with a few basal hairs and many apical hairs, more or less ciliate, innermost bracts ligulate or ligulate-spathulate obtuse or subtruncate and erose 2.5 cm. long by 6 mm. broad hairy outside and glandular, inside nearly glabrous, margin

* See note on previous page.

obscurely ciliate; bracteoles thread-like about 1 cm. long adpressedly hairy longer than pedicel; pedicel very short about 5 mm. long more or less pubescent with floccose greasy often reddish hairs. Calyx very minute about 1.5 mm. long a few floccose greasy hairs outside, lobes half its length triangular fleshy red with a few short greasy cilia. Corolla tubular-campanulate about 3 cm. long pink red-spotted including both stamens and style, fleshy, glabrous outside and inside 5-gibbous and retuse with septal infolding of petals between glandular areas of base of corolla-tube, lobes broad shallowly or deeply emarginate crenulate about 7 mm. long by 1.8 cm. broad. Stamens 10 (11) shorter than corolla unequal, longest 2.2 cm. long with anthers (? purple) 2 mm. long, shortest about 1.3 cm. long with anthers 1.5 mm. long; filaments thin not widened to base, glabrous. Gynaeceum about 2.5 cm. long, longer than stamens, shorter than corolla; ovary narrow cylindrico-conoid grooved about 5 mm. long by 1.75 mm. broad sparingly clad with floccose greasy often reddened hairs; style glabrous thin not swollen at the point on which sits a much lobulate stigma not broader than style. Capsule brown slightly warted all over and shallowly grooved about 3 cm. long and 3 mm. in diam. crescentically curved dehiscing by 5 valves from apex. Only unripe seed seen.

Bhutan. Kyertsa Pumthang. Alt. 9000 ft. 15–20 ft. bush, spare habit under mixed moist forest;—in dried flowers and fruit. Clay soil. Flowers said to be pink, red spots. R. E. Cooper. No. 4086. 1.7.15.

Bhutan. Pima Kurted. Alt. 7000 ft. 25 ft. shrub, fruit only. Mixed forest. R. E. Cooper. No. 4160. 23.7.15.

Bhutan. Pumthang. Alt. 9000 ft. 15–20 ft. bush under Picea in clayey soil. R. E. Cooper. No. 4978. –.9.15.

Rhododendron Fittianum, Balf. f.

Frutex parvus sempervirens aromaticus. Ramuli juveniles saepe virgati a basi foliati pallide virides lepidoti squamis discontiguis peltatis saepe perspicue stipitatis. Folia petiolata ad 3.5 cm. longa; lamina elliptico-oblonga ad 3 cm. longa 0.5 cm. lata coriacea subcrassa obtusa breviter mucronulata margine tenuis paullo recurva basi obtusa, supra convexa atro-viridis sed indumento paulum griseo vel subfulvo squamarum peltatarum superficialium induta squamis ex umbone lato et instita horizontali constructis primo albidis deinde secretione fulva vel rufa impletis costa media sulcata venis primariis utrinsecus ad 7 occultis, infra pallidior flavido-viridis concava costa media et venis primariis elevatis ubique squamis peltatis uniformibus fere contiguis deinde aurantiacis vestita; petiolus circ. 5 mm.

longus copiose ut laminae superficies inferior lepidotus. Flores in umbellas semper terminales 4–5-floras dispositi; ramuli umbelliferi plures breves paucifoliati ex axillis foliorum rami floriferi viridium orientes infimi inter se distantes supremi circa umbellam rami floriferi ipsius terminalem fasciculati; bracteae parvae circ. 6 mm. longae 3.5 mm. latae exteriores steriles coriaceae ovatae griseo-fulvae cucullatae paullo carinatae mucronulatae intus sericeae extus lepidotae et puberulae margine ciliatae apiceque piloso-cristatae, interiores fertiles membranaceae brunneae spathulatae circ. 8 mm. longae 4 mm. latae indumento similariter indutae; bracteolae filiformes circ. 8 mm. longae pedicellis breviores brunneae haud clavatae basi sparsim pilosae apice cristatae; pedicelli circ. 1 cm. longi crassiusculi stricti divaricati pallide virides squamis superficialibus contiguis viridi-albis perspicue stipitatis dense lepidoti. Calyx parvus cupularis circ. 1.5 mm. longus viridis squamis contiguis viridi-albis contiguis dense lepidotus, limbo sub-obsoleto margine subfimbriato et pilis paucis contortis longis ciliato. Corollae circ. 1.6 cm. longae pallide violaceae extus glabrae tubus basi subventricosus intus puberulus circ. 3.5 mm. longus sursum in limbum ex disco infundibulari et lobis 5 ellipticis vel oblongis 9 mm. longis et 7 mm. latis obtusis subcrenulatis auriculatis subaequalibus subpatentibus aedificatum expansus. Stamina 10 paullo inaequalia longiora circ. 1.6 cm. longa corollam aequantia breviora circ. 1.2 cm. longa, antheris rubro-brunneis circ. 1 mm. longis, filamentis pallide violaceis basi haud dilatatis supra basim ad ovarii apicem albido-villosis. Discus viridis puberulus. Gynaeceum corollam et stamina paullo superans; ovarium conoideum vix sulcatum circ. 2 mm. longum viride squamis peltatis superficialibus albido-viridibus lepidotum; stylus subpurpureus vel basi viridi-albidus apiceque violaceus glaber sub stigmate vix clavatus; stigma lobulatum erubescens stylo haud latius labio rubro stylari cinctum.

Species *Rh. daurico,* Linn. affinis sed floribus in umbellas solitarias ad apicem ramulorum foliatorum lateralium dispositis distinguenda.

E.N.W. Yunnan. G. Forrest.

Rh. Fittianum, Balf. f. appeared as a "rogue" in seed-pans of the Chinese *Rh. radinum,* Balf. f. et W. W. Sm.* at Werrington Park, where is so well grown under the care of Robert Frank Fitt—from whom this species takes its name—a portion of the unique collection of rhododendrons owned by Mr. J. C. Williams of Caerhays. *Rh. radinum* was found by Mr. Forrest on high slopes of the Likiang Range in Yunnan, and we may assume that *Rh. Fittianum* grows in com-

* See Notes, R.B.G., Edin., x (1916), 268.

pany with it and that seeds of the two collected together have been mixed. We have no record in Mr. Forrest's dried collections of a plant like *Rh. Fittianum*.

Rh. Fittianum promises to be a valuable horticultural plant, and is also of interest from the botanical standpoint.

It belongs to the Dauricum series of rhododendrons which is typified in *Rh. dauricum*, Linn., a familiar and decorative plant of our shrubberies which has been in cultivation since 1780. *Rh. dauricum* is a plant of considerable range in N.W. Asia. Its distribution, as given by Maximowicz in 1870,* is :— Siberian Altai to the extreme east, Kamtschatka, Davuria, Russian Manchuria to the mouth of the Amur, and the confines of Corea. Hemsley † records a remarkable extension of its range into Chili and Shantung. It is now known from Yezo in the extreme north of Japan. From West China there is no record.

The most striking feature of *Rh. Fittianum* is its floriferousness. This is due to the development of flower-shoots in the axils of the leaves throughout the length of the shoots. This free flower-formation is not common in rhododendrons. The most familiar example is perhaps that of *Rh. racemosum*, Franch., a plant commonly cultivated in gardens nowadays. The West Himalayan *Rh. virgatum*, Hook. f. and its Chinese representative *Rh. oleifolium*, Franch. show it also. But the branching in *Rh. Fittianum* is not quite the same as in these species. In them each axillary flower-shoot is that and no more—it begins with sterile bracteal scale-leaves covering the flower-bud and ends in the inflorescence. In *Rh. Fittianum* the axillary shoots are vegetative in the first instance, produce a few green leaves and then end in the flower-bud covered by its bracts. In *Rh. dauricum* the lateral flowering shoots are axillary to the last-formed leaves only, and are therefore clustered at the end of the mother shoot and they may or may not begin with foliage-leaves.

Rhododendron fulvum, Balf. f. et W. W. Sm.

Frutex 3–6 m. altus. Rami crassi ad 7 mm. diam. fulvo-tomentosi tomento per annos plures persistente. Alabastra ignota. Folia petiolata ad 18 cm. longa sub anthesi deflexa ; lamina coriacea ad 15.5 cm. longa ad 6 cm. lata elongata anguste obovata vel late oblanceolata apice breviter et acuminatim corneo-apiculata margine plana basi obtusa haud rotundata, supra glabra sed pilorum juvenilium vestigiis minute notata opaca laevis epapillata costa media et venis primariis

* Maxim. Rhodod. Asiae Orient. (1870), 43.
† Hemsl. in Journ. Linn. Soc. xxvii (1889), 22.

utrinsecus ad 13 sulcatis, subtus rufo-cinnamomea costa media plus minusve rufo-floccosa elevata venis primariis suboccultis vel paullo prominulis ubique indumenti strato uno tenui haud scintillante persistente rufo vestita indumenti pilis in modum peniculi capitati floccosis pilo quoque ex stipite sub-longo pluricellulari ad apicem disco rufo-colorato terminato et in ramulos plures longos haud latos contortos vesiculosos radiatim deliquescente composito; petiolus supra sulcatus ad 2.5 cm. longus indumento eodem dense praeditus. Flores plurimi (ad 20) in umbellam veram globosam dispositi; bracteae fertiles deciduae oblongo-spathulatae ad 2.5 cm. longae extus intusque sericeae apice subtruncatae et nunc apiculatae; pedicelli subaequales ad 2 cm. longi stricti graciles plus minusve floccoso-pubescentes glabrescentes. Calyx minutus dentibus 5 deltoideis brevissimis glabris. Corolla rosea infundibuliformi-campanulata ad 4 cm. longa basi paullo et regulariter gibbosa intus glabra basi intense rubescens, lobis 6 rotundatis emarginatis circ. 1.5 cm. longis 2.2 cm. latis. Stamina 10 inaequalia longiora ad 2.7 cm. longa breviora 1.7 cm. tubo corollino breviora, filamentis basi paullo latioribus et minute puberulis. Gynaeceum circ. 3.2 cm. longum corolla brevius; ovarium atro-purpureum conoideum glabrum angustum circ. 7 mm. longum 2.5 mm. latum; stylus glaber; stigma stylo vix latius.

Species habitu *Rh. Beesiani,* Diels sed indumento omnino diverso, petiolo indumento vestito, pedicellis brevioribus, ovario glabro, stigmate vix expanso recedit.

W. Yunnan. Western flank of the Shweli-Salween divide. Alt. 10,000–11,000 ft. Lat. 25° 20′ N. Rhododendron forest. Shrub of 20–25 ft. In fruit. G. Forrest. No. 8989. August 1912.

W. Yunnan. Western flank of the Shweli-Salween divide. Alt. 10,000–11,000 ft. Lat. 25° 20′ N. Rhododendron forest. Shrub of 12–18 ft. In fruit. G. Forrest. No. 9001. August 1912.

W. Yunnan. Shweli-Salween divide. Alt. 9000 ft. Lat. 25° 30′ N. In mixed thickets and on the margins of forests. Shrub of 20 ft. Flowers pale rose flushed deeper shade exterior. G. Forrest. No. 11,842. May 1913.

W. Yunnan. Shweli-Salween divide. Alt. 10,000 ft. Lat. 25° 30′ N. In open thickets. Shrub of 10–20 ft. Flowers bright rose. G. Forrest. No. 11,940. June 1913.

A fine species, with smaller flower trusses than *Rh. Beesianum,* Diels, which it resembles much in general features and of which—a Likiang plant—it is the West Yunnan representative. It is easily distinguishable from *Rh. Beesianum.* The

shoots are always fulvous tomentose not glabrous. Its underleaf indumentum does not appear to be deciduous, and the structure of the indumental hairs is very different. Here they are relatively large dense flocks, each with a somewhat long stipe of many cells branching off at the top into many long twisted threads which do not in dried specimens seem to interlace to form a surface wool-like layer but stand out like strands of a mop, giving a sort of powdery aspect to the whole surface of the indumentum. The hair-branches are of medium diameter, neither filiform nor broadly vesicular. In *Rh. Beesianum* the indumentum-hairs are true flocks also, but of rosette-type. The basal stipe is very short and only some 5 or 6 short broad vesicular hair-branches radiate from it, spreading out more or less flatly, their walls often beautifully striate. These branches are so interlaced as to give rise to a smooth suède general surface, which is most characteristic. Then the flocks are deciduous. Other distinctive characters from *Rh. Beesianum* are :—the leaves are not rugulose on the upper surface, the petioles not glabrous but coated with indumentum, the inflorescence umbellate not racemosely umbellate, the shorter more delicate pedicels, the smaller flowers, the narrower glabrous ovary and the less expanded stigma.

Rhododendron fumidum, Balf. f. et W. W. Sm.

Frutex circ. 2 m. altus. Rami annotini circ. 2 mm. diam. rubri epilosi squamis peltatis brunneo-rufis fere contiguis lepidoti, seniores squameo-verruculosi. Alabastrorum fusiformium perulae exteriores brunneae coriaceae rotundatae vel late ovatae, interiores spathulatae circ. 1.1 cm. longae 4.5 mm. latae membranaceae truncatae mucronulatae dorso plus minusve lepidotae et puberulae intus puberulae et squamis paucis obsitae ciliatae ; folia juvenilia convoluta utrinque lepidota supra laevia ad costam mediam puberula. Folia petiolata ad 9 cm. longa ; lamina subcrasse coriacea oblonga vel oblongo-ovalis ad 7.5 cm. longa sursum attenuata subacuminata mucrone longo (1 mm. vel ultra) ad extremitatem rubro-tuberculato terminata margine cartilaginea paullo recurvata basi late rotundata nunc cordulata interdum inaequalis, supra atroviridis opaca squali corium subsimulans squamarum vestigiis griseis vel nigricantibus notata costa media sulcata puberula venis primariis utrinsecus circ. 8 vix conspicuis, infra fulva squamis peltatis uniformibus discontiguis ex umbone lato convexo secretione rubra impleto institaque angusta brunnea aedificatis intervallis epidermicis squamarum diametro minoribus costa media elevata erubescente sparsim lepidota venis primariis occultis ; petiolus 1–1.5 cm. longus ruber lepi-

dotus supra sulcatus sulco puberulo. Flores in racemo-umbellas terminales 5–7-floras dispositi rhachi circ. 7 mm. longa lepidota et puberula; bracteae ignotae; bracteolae linear-clavatae subaristatae brunneae circ. 8 mm. longae pedicellis breviores dense pilosae sparsim lepidotae; pedicelli 1–1.5 cm. longi stricti erecti epilosi dense lepidoti. Calyx crateriformis circ. 2 mm. longus extus dense lepidotus, lobis 5 circ. 1 mm. longis late triangularibus vel semilunatis plus minusve ciliatis. Corolla campanulata circ. 2.4 cm. longa atro-violacea postice viridi-maculata extus dense lepidota intus dense puberula, lobis circ. 1.2 cm. longis 1 cm. latis subovalibus apice rotundatis crenulatis interdum emarginatis. Stamina 10 inaequalia longiora 2.2 cm. longa corolla paullo breviora antheris circ. 2.5 mm. longis breviora circ. 1.2 cm. longa antheris 1.5 mm. longis, filamentis basi nuda vix 1 mm. longa expansis sursum ad apicem tubi corollini villosis superne glabris. Discus puberulus circ. 1 mm. longus. Gynaeceum circ. 1.7 cm. longum staminibus longissimis brevius; ovarium cylindrico-conoideum sulcatum circ. 4.5 mm. longum dense imbricatim lepidotum epilosum; stylus ruber glaber circ. 1.2 cm. longus apice sub stigmate atro-purpureo lobulato clavatus. Capsula oblonga circ. 1.5 cm. longa 4 mm. diam. lepidota.

Species *Rh. brevistylo*, Franch. et *Rh. pholidoto*, Balf. f. et W. W. Sm. affinis ab illa foliis subcrasse coriaceis basi rotundatis vel cordulatis, calyce extus epiloso, corolla viridi-maculata, ovario epiloso, stylo glabro distinguenda, ab hac foliis majoribus, pedicellis brevioribus, calyce extus epiloso, corolla viridi-maculata, ovario epiloso recedit.

N.E. Yunnan. Plateau of Te-ma-Tchouan. Alt. 3200 m. Flowers violet. July. Maire. No. 224. In Herb. Edin.

N.E. Yunnan. Summit of Io-chow. Alt. 3400 m. Flowers sombre violet. June. Maire. No. 62. In Herb. Edin.

This is a representative in N.E. Yunnan of the Heliolepis series, which is spread in several species over regions more to the west, as the following table shows :—

Rh. brevistylum, Franch. (1898).	W.N.W. Yunnan: Mekong Valley, Mt. Sela. (Soulié.) S.E. Tibet: Doker La, 11,000–12,000 ft. (Ward.)
Rh. fumidum, Balf. f. et W. W. Sm. (1917).	N.E. Yunnan: Te-ma-Tchouan and Io-chow, 10,000 ft. (Maire.)
Rh. heliolepis, Franch. (1887).	E.N.W. Yunnan: Hoking, 8000 ft. (Delavay); Koua-la-po, 11,000 ft. (Delavay.)

	E.N.W. Yunnan: Mts. in N.E. of Yangtze bend, 11,000 ft.; Likiang Range, N.W. flank, 12,000–13,000 ft. (Forrest.)
Rh. invictum, Balf. f. et Farrer (1917).	Kansu: Siku-Satanee Ranges, 8000–9000 ft. (Farrer and Purdom.)
Rh. oporinum, Balf. f. et Ward (1917).	E. Upper Burma: Wulaw Pass, Valley of Naung-Chaung, 11,000–12,000 ft. (Ward.)
Rh. pholidotum, Balf. f. et W. W. Sm. (1917).	Mid. W. Yunnan: Tali Range, E. flank, 10,000–12,000 ft. (Forrest.)
Rh. plebeium, Balf. f. et W. W. Sm. (1917).	W. Yunnan: Shweli-Salween divide, 10,000–11,000 ft. (Forrest.)
Rh. rubiginosum, Franch. (1887).	Mid. W. Yunnan: Tali Range, 8000–11,000 ft. (Delavay); Likiang Range, 10,000–12,000 ft. (Forrest.)

The list does not include all the forms of the series. Both from Western and Eastern Yunnan there are specimens which do not come within the limits of described species. Their position remains for future investigation to determine. *Rh. rubiginosum* seems to be variable, and probably its specific boundary will have to be redrawn when we get to know more of the plants of which there is at present available for study inadequate material. In the list given above I have cited for its distribution only areas from which the type or undoubtedly typical specimens have been brought.

Rh. fumidum belongs to the set within the Heliolepis series, in which the uniform scales on the under-leaf surface are discontiguous but separated by intervals less than the diameter of the scales. Its nearest ally seems to be *Rh. pholidotum*, in which the pedicels are longer, the calyx puberulous outside, and the ovary hair-crested. The glabrous style of *Rh. fumidum* is a character which it shares in the series with *Rh. rubiginosum*. *Rh. pholidotum* is exceptional in having the style sometimes glabrous sometimes pilose.

Rhododendron herpesticum, Balf. f. et Ward.

Frutex ad 30 cm. altus ramis decumbentibus intertextis late patentibus bambusetum alpinum et montium summorum

rhododendreti tapeta incolens. Ramuli hornotini ad 2 mm. diam. indumento bistrato vestiti, pilis strati inferi floccosis niveis e stipite brevissimo ramulisque plurimis vacuis vesiculosis radiatis aedificatis mox deciduis, strati superi setiformibus longis crebris sebaceis fulvis ad apicem rubro-glandulosis per annos 2–3 plus minusve persistentibus, annotini et bimi et trimi fulvi et setulis plus minusve obtecti vel earum vestigiis verruculosi dein albido-grisei et decorticantes. Alabastrorum angustorum acutorum perulae extimae anguste semilanceolatae acutae ad 5 mm. longae circ. 2 mm. latae subnigrae extus intusque niveo-floccosae, intimae ad 9 mm. longae 3.5 mm. latae oblongae acuminatae extus niveo-floccosae margine ad apicem fimbriatae intus glabrae. Folia petiolata ad 8 cm. longa ; lamina crasse coriacea oblanceolata vel oblonga vel oblongo-elliptica ad 7 cm. longa 3 cm. lata apice rotundata vel subtruncata vel subretusa tuberculato-mucronata margine paullo recurvata cartilaginea nunc erubescens basi cuneata rarius obtusa, supra atro-viridis glabra sed pilorum juvenilium vestigiis plus minusve notata (lamina juvenilis revoluta pilis floccosis niveis supra obtecta est) costa media et venis primariis utrinsecus ad 12 paullo sulcatis caeteroquin in modum squali corii leviter rugulosa, subtus costa media erubescente vel nigrescente minute puberula et glabrescente caeteroquin indumenti strato uniformi laevi compacto persistente venas primarias fere celante (indumenti pilis floccosis brevissime stipitatis ramulos vesiculosos vacuos quoquoversus intertextos gerentibus) vestita ; petiolus circ. 1 cm. longus nigro-purpureus glaber vel indumenti juvenilis densi nivei floccosi vestigiis obtectus. Umbella terminalis 2–4-flora ; bracteae et bracteolae mox deciduae ignotae ; pedicelli nigro-purpurei validi stricti circ. 2 cm. longi cum inflorescentiae rhachi floccosim fulvi et dense glanduloso-setulosi ad apicem haud obliqui. Calyx subgrandis cupularis (cupula nigro-purpurea) apertus extus plus minusve glanduloso-setulosus in limbum membranaceum flavido-viridem 5-lobatum expansus circ. 8 mm. longus (sub fructu auctus), lobis semi-lunatis circ. 2 mm. longis 6 mm. latis margine glandulis stipitatis ciliatis. Corolla opaco-lutea vel aurantiaco-rubra tubuloso-campanulata ad 3.5 cm. longa utrinque glabra, lobis 5 fere rotundatis circ. 1.1 cm. longis 1.3 cm. latis erecto-patentibus emarginatis. Stamina 10 inaequalia longiora ad 2.5 cm. longa breviora circ. 1.8 cm. longa, filamentis deorsum latioribus basi puberulis, antheris atro-purpureis parvis circ. 2.5 mm. longis. Gynaeceum circ. 2.75 cm. longum ; ovarium 5 mm. longum nigro-purpureum sulcatum pilis fasciatis fuscis et glandulis setulosis praecipue ad juga dense obtectum ; stylus nigro-purpureus glaber sub stigmate lobulato haud expanso vix ampliatus.

Species ex affinitate *Rh. sanguinei*, Franch. indumento sebaceo-setuloso bene distincta.

Eastern Upper Burma. Nwai Divide. Ridge of Naung-Chaung. Alt. 12,000–13,000 ft. Dwarf shrub forming tangled growths covering a good deal of ground and rising to a height of about a foot. Amongst bamboo growth on the ridge near tree limit and amongst rhododendron carpet at the summit of the mountain (N. slope). Flowers dull yellow and orange-red. F. Kingdon Ward. No. 1793. 16.7.14.

This is a pretty species allied to *Rh. sanguineum*, Franch. This series of rhododendrons is characterised by the white or grey under-leaf indumentum forming a crusty uniform stratum composed of floccose hairs with very short stalks from which radiate long empty vesicular branches which by interweaving form the smooth often crust-like surface; by the tubular campanulate 5-lobed corolla; by the 10 stamens; by the ovary densely coated with ascending chestnut-coloured fasciate hairs often mixed more or less with greasy setae with club-shaped ends; by the glabrous style and narrow stigma. The series seems to be well developed along the Burma-Yunnan frontier from Tibet southwards. *Rh. herpesticum* is readily separated from *Rh. sanguineum* by the setulose twigs and petioles on which there is also a lower indumental stratum of white floccose hairs. Also the calyx-lobes are well developed. The indumentum-characters also separate it from *Rh. dichroanthum*, Diels and from *Rh. apodectum*, Balf. f. et W. W. Sm.

Rh. invictum, Balf. f. et Farrer.

Frutex tenuiramosus ad 2 m. altus ubique lepidibus peltatis magnis plus minusve vestitus, lepidibus ex umbone magno tandem secretione aurea tincto institaque aequilata integra aedificatis. Ramuli annotini rubro-purpurei circ. 1.5 mm. diam. plus minusve puberuli et lepidoti demum griseo-decorticantes. Alabastrorum lateralium oblongorum circ. 3 mm. diam. acutorum perulae exteriores tenuiter coriaceae pallide brunneae rotundatae circ. 4 mm. diam. leviter carinatae mucronatae extus minute puberulae et centro lepidotae intus glabrae (costa media prope apicem adpresso-puberula excepta) margine minute ciliatae, interiores pallide virides spathulatae circ. 1 cm. longae 3.5 mm. latae submembranaceae apice rotundatae mucronulatae extus epilosae centro lepidotae minute ciliatae; folia juvenilia convoluta subtus squamulis imbricatis dense flavido-lepidota (costa media plus minusve excepta) supra puberula fere elepidota costae mediae sulco dense puberulo. Folia petiolata ad 5.5 cm. longa; lamina coriacea elliptica vel oblongo-elliptica circ. 4.5 cm. longa 2.5 cm. lata apice obtusa mucrone conspicuo, margine

leviter cartilaginea fere plana, basi late obtusa vel rotundata, supra atro-viridis leviter rugulosa plus minusve minute puberula et squamulis paucissimis marcidis albidis praecipue ad basim notata costa media erubescente sulcata sulco pilis impleto venis primariis utrinsecus circ. 6 vix conspicuis, subtus olivacea vel olivaceo-brunnea epilosa costa media elevata rubra squamulis paucis scintillantibus obducta, caeteroquin squamulis uniformibus discontiguis latis flavidis (umbone secretione aureo-annulato instita albida membranacea) praedita intervallis squamulis angustioribus; petiolus ad 1 cm. longus dense lepidotus supra sulcatus et puberulus. Flores 2 (v. plures) in umbellam veram terminalem dispositi; bracteae mox deciduae ignotae; bracteolae spadiceo-brunneae lineares acutae dense et breviter puberulae elepidotae; pedicelli atro-purpurei minute puberuli squamulis albidis vel fulvis peltatis conspersi stricti circ. 8 mm. longi. Calyx parvus ad 2 mm. longus cupularis, cupula dense lepidota et sparsim puberula, lobis 5 ovatis circ. 1 mm. longis dense puberulis (squamulis paucis intermixtis) ciliatis et squamoso-fimbriatis. Corolla purpurea infundibuliformi-campanulata circ. 2.2 cm. longa extus postice lepidota caeteroquin glabra intus puberula, lobis oblongis integris circ. 1.3 cm. longis 9 mm. latis antero-lateralibus longioribus. Stamina 10 inaequalia longiora circ. 2.5 cm. longa corollam superantia breviora circ. 1.5 cm. longa, antheris circ. 2 mm. longis, filamentis deorsum latioribus basi nudis sursum per 2.5 mm. ultra ovarii apicem pubescentibus. Discus lobulatus circ. 1 mm. longus puberulus. Gynaeceum circ. 2.8 cm. longum corollam staminaque superans; ovarium breve circ. 3 mm. longum conoideum leviter sulcatum dense imbricatim flavido-lepidotum ad apicem nunc piloso-cristatum; stylus ipse circ. 2.5 cm. longus ruber basi pilosus apice paullo clavatus ampliatus et sub stigmate lobulato purpureo cupularis. Capsula nigro-brunnea squamulis albidis discontiguis peltatis sigillata circ. 1.2 cm. longa 4 mm. diam. ab apice valvis 5 dehiscens basi calycis cupula cincta.

Species *Rh. pholidoto*, Balf. f. et W. W. Sm. affinis foliis obtusis ellipticis subtus squamulis haud fere contiguis praeditis supra puberulis, bracteolis elepidotis, pedicellis puberulis et lepidotis, calycis lobis dense puberulis, corolla staminibus et stylo breviore postice solum lepidota, stylo staminibus longiore, ovario breviore late separata.

Kansu. A frail bush of 4–7 ft., not uncommon in the alpine coppice of the Siku-Satanee Ranges at 8000–9000 ft. Farrer and Purdom. April–May.

We have here a species which, without doubt, belongs to the Heliolepis section, but it shows certain divergences which break in upon the uniformity which the series

otherwise exhibits. One notes that the upper surface of the young leaves produces but few peltate scales and these chiefly near the base of the lamina where it is about to join the petiole and, as if by way of substitute protection the whole surface becomes shortly puberulous. One may say that there is over the whole plant a tendency to a development of hairs alongside of and taking the place in part of peltate scales—on the pedicels along with the scales, supplanting the scales on the bracteoles, profusely covering the calyx-lobes associated with but a few scales. Then the style and stamens are both slightly longer than the corolla, and the style is longer than the longest stamens—only slightly so but clearly.

Rh. invictum has its nearest ally perhaps in *Rh. pholidotum*, but the pointed leaves, umbels with more flowers, closer-set scales of that species are superficial diagnostic characters to take along with the special features already mentioned which are shown by *Rh. invictum*. In *Rh. invictum*, as in *Rh. pholidotum*, the slight zygomorphy of the flower is marked. I am not sure but that the character really marks all the species in the series, but I have insufficient material and observation for a precise statement.

Rhododendron mallotum, Balf. f. et Ward.

Arbor macera 3–5 m. alta. Rami crassi annotini 6 mm. diam. indumento tomentoso crasso persistente primo fulvo mox griseo-nigricante omnino involuti, indumenti pilis scopiformibus multiramosis ramis longis aseptatis acutis ab apice stipitis longi nudi multicellularis erecto-patentibus haud intertextis nunc stipitem ex toto induentibus. Folia petiolata ad 9.3 cm. longa ; lamina crasse coriacea elliptico-oblonga vel obovata ad 8 cm. longa 4 cm. lata apice rotundata tuberculo-mucronata margine cartilaginea paullo recurva basi late obtusa vel subrotundata, supra atro-viridis subbullata costa media basi crassa subelevata sursum sulcata tomentosa sed glabrescente venis primariis utrinsecus ad 10 sulcatis caeteroquin glabra, subtus indumento crasso fulvo ei ramorum simili venas occludente ubique vestita ; petiolus crassus ad 1.3 cm. longus 3 mm. diam. indumento fulvo ex toto involutus. Flores in racemo-umbellam terminalem multifloram (ad 20–) dispositi ; bracteae bracteolaeque ignotae ; pedicelli breves crassi circ. 7 mm. longi indumento fulvo involuti sub flore obliqui. Calyx obsoletus omnino indumento obtectus dentes 5 minutos exhibens. Corolla kermesina tubuloso-campanulata carnosula circ. 3.5 cm. longa omnino glabra basi 5-gibbosa retusa et intus septis incompletis petalinis divisa 5-lobata, lobis obcordatis circ. 1 cm. longis 2 cm. latis subcrenulatis. Stamina 10 inaequalia longiora circ. 2.8 cm. longa corolla

breviora antheris atro-purpureis circ. 3 mm. longis breviora circ. 2 cm. longa antheris circ. 2.5 mm. longis, filamentis kermesinis basi vix dilatatis glabris. Discus circ. 1.3 mm. longus glaber. Gynaeceum circ. 3.5 cm. longum corollam subaequans; ovarium parvum circ. 4 mm. longum sulcatum indumento crasso tomentoso fulvo pilorum scopiformium ascendentium involutum; stylus ruber glaber sub stigmate haud expansus; stigma parvum lobulatum stylo haud latius.

Species ex affinitate *Rh. lanati*, Hook. f. corolla kermesina staminibusque glabris facile distinguenda.

E. Upper Burma. Hpimaw. On open hillsides above the pass, 11,000–12,000 ft. Scraggy tree 10–15 ft. Flowers crimson. F. Kingdon Ward. No. 1567. 19th May 1914.

This is one of these interesting forms which Mr. Kingdon Ward has brought from East Upper Burma, carrying the types of East Himalayan rhododendrons farther eastward. The affinity of *Rh. mallotum*, Balf. f. et Ward is with the Sikkim and Bhutan *Rh. lanatum*, Hook. f. Ward's plant may be spoken of as a crimson-flowered *Rh. lanatum*. The two species are alike in their very thick persistent indumentum, the hairs of which in *Rh. lanatum* are rather tree-like (dendriform) than besom-like (scopiform) as they are in *Rh. mallotum*, and the hair-branches of *Rh. lanatum* are also slenderer, curl more, and interlock, are not stiff erect and patent. In addition to its yellow corolla, the densely villous staminal filaments give a character separating *Rh. lanatum*.

Rhododendron manipurense, Balf. f. et Watt.

Rh. Maddeni var. *obtusifolium*, Hutchinson in Bot. Mag. (1908), t. 8212.

Frutex epilosus multiramosus tortuosus. Rami hornotini furfuraceo-lepidoti squamis imbricatis, basi perulis extimis aggregatis alabastrorum cincti, sursum perulis intimis inter se distantibus induti, annotini circ. 6 mm. diam. atro-rubentes squamis rubiginosis obtecti, seniores glabrescentes. Alabastrorum foliarium perulae omnes extus lepidotae extimae semifoliaceae, intermediae cataphylloideae rotundatae vel ovato-rotundatae coriaceae eciliatae, intimae submembranaceae ligulato-spathulatae circ. 2 cm. longae 5 mm. latae; folia juvenilia convoluta utrinque cum petiolo imbricatim argenteo-lepidota. Folia petiolata ad 20 cm. longa; lamina crasse coriacea oblonga vel elliptico-oblonga ad 18 cm. longa et 8 cm. lata apice obtusa vel acutiuscula nunc subrotundata tuberculo-mucronata margine cartilaginea vix revoluta basi attenuata obtusa vel sub-cuneata supra laete viridis nitens nunc rubiginoso-tincta venulosa costa media sulcata venis primariis utrinsecus ad 12 haud conspicuis

squamis rubiginosis vel nigricantibus conspersa, subtus cinnamomea costa media prominente venisque primariis vix elevatis ubique squamis rufis peltatis biformibus discontiguis quasi punctulatim lepidota, squamis crasse stipitatis in foveolas profundas immersis (paucis majoribus conspersis) ex umbone convexo scintillante institaque integra latiore pallidiore aedificatis, intervallis epidermicis conspicuis papillatis papillis conoideis ; petiolus ad 3 cm. longus crassus imbricato-lepidotus vel foveolatus et squamoso-furfuraceus. Alabastra florum magna ovoidea glutinosa bracteis extimis semifoliaceis reflexis interioribus late ovatis vel rotundatis intense rubris dorso lepidotis obtecta. Flores magni in umbellam terminalem 4–5-floram laxam dispositi ; bracteolae lineares acutae circ. 1.8 cm. longae pedicellis longiores ; pedicelli crassi breves ad 1 cm. longi 3 mm. diam. lepidoti in cupulam calycinam expansi. Calyx fere ad basim 5-partitus, cupula circ. 2 mm. longa extus dense lepidota, lobis oblongis apice rotundatis subfoliaceis membranaceis flabelliveniis ad 1.5 cm. longis 1 cm. latis elepidotis inaequalibus postero-lateralibus minoribus. Corolla magna puralba ad 10 cm. longa, tubo angusto infundibuliformi circ. 6.5 cm. longo extus lepidoto epiloso intus pubescente in limbum campanulatum 5-lobatum ampliato, lobis rotundatis circ. 3.5 cm. longis 3 cm. latis undulatis. Stamina 18–20 subaequalia longiora ad 8 cm. longa stylo breviora, filamentis filiformibus basi paullo latioribus a basi ad medium pubescentibus, antheris circ. 5 mm. longis. Ovarium ovoideum circ. 8 mm. longum imbricatim rufo-lepidotum ; stylus corolla paullo brevior fere ex toto lepidotus ; stigma discoideum lobulatum. Capsula recta magnitudine variabilis nunc 2 cm. nunc 4 cm. longa 1 cm. lata squamosa valvis ab axi deciduis.

Species notabilis a *Rh. Maddeni*, Hook. f. et *Rh. calophyllo*, Nutt. calyce magno staminumque filamentis pubescentibus, a *Rh. Dalhousiae*, Hook. f. corolla extus lepidota staminibusque 18–20 recedens.

Manipur. Japvo. Alt. 8000–10,000 ft. An extremely common plant, forming a dense jungle with much branched and kneed stems. Leaf elliptic bright shining above dotted below and becoming deep rufous with age. Flower-buds large ovate embraced by ovate acute deep red scales, the outer 2–3 of which become green and reflexed. Fruits 12-carpelled, leaving a central axis with style 3 inches long. Calyx at bottom free long. G. Watt. No. 6461. 9th March 1882.

Manipur. Sirohifurar. Alt. 8000 ft. A common rhododendron on the smaller peak. Collected large supply of seeds. Fruit when burst open spreads rotate with the long persistent style arching away for 3 inches. Evidently a late-flowering

species. Flower-buds small, will expand three or four months hence. Leaves large ovate oblong elliptic bright shining green above with rufous spots below quite glabrous. Young twigs stout dark red glabrous, leaf horizontal. Watt. No. 6461. 12th April 1882.

Manipur. Ching Sow. Alt. 8500 ft. Only in foliage, old fruits and flower-buds. Leaves broader with stouter petioles than No. 6513, but probably the same; both forming large bushes with few long ascending branches. Watt. No. 6512. 16th April 1882.

Manipur. Ching Sow. Alt. 8000 ft. Under surface of leaf unusually green but no doubt same as No. 6512. Watt. No. 6513. 14th April 1882.

Manipur. Keyang. Alt. 9000 ft. Common. Watt. No. 6703. 22nd April 1882.

Manipur. Japvo, Naga Hills. Alt. 10,000 ft. In consequence of an appeal from me, my friend Dr. W. Coury, Surgeon to the 42nd N.I., then stationed at Kohima, paid a visit to Japvo to collect some plants for me. Of these perhaps the most successful was re-gathering of my No. 6461 in full flower. Flowers large pure white, about 3–4 inches long. Calyx of 5 free teeth, 2 half the length of the other 3, oblong obtuse membranous. Near to but I think quite distinct from *Rh. Maddeni*, Hook. f. Have referred this point to Kew. Watt. No. 7333. 22nd July 1882.

In Sir George Watt's Herbarium I found some sheets of this rhododendron about the precise identity of which he was uncertain, but which, as his field tickets show, appeared to him to be more or less related to *Rh. Maddeni*, Hook. f. yet different. These Manipur plants are all of them related to *Rh. Maddeni*, Hook. f. and its immediate microforms *Rh. calophyllum*, Nutt. and *Rh. Jenkinsii*, Nutt., but they have diverged from the typical *Rh. Maddeni*, Hook. f. by enlargement of the calyx and by development of hairs on the filaments of the stamens. These two characters the Manipur plants possess in common with the West Chinese, *Rh. crassum*, Franch. and its immediate allies *Rh. excellens*, Hemsl. et Wils. and *Rh. megacalyx*, Balf. f. et Ward.

As regards the calyx-enlargement, it is to be noted that in the dried specimens there is a slight irregularity in the calyx lobes of *Rh. manipurense*. All of them are enlarged, but two are commonly smaller than the others. Sir Joseph Hooker points out that in the small calyx of *Rh. Maddeni* the lobes are unequal and the "upper lobe is often elongated." This is, however, a very different condition from what appears in *Rh. manipurense*—although indicative of calycine enlargement as a feature in the phylum.

I must point out also that in *Rh. manipurense* the androecium has in numerical symmetry and length of stamens and anthers the character of *Rh. Maddeni.* Hooker gives the number of stamens in *Rh. Maddeni* as 17–20, and they are as long as the tube. I find the same number and length in *Rh. manipurense.* In this *Rh. manipurense* approaches *Rh. Maddeni* more nearly than it does *Rh. crassum* and its allied forms named above, which all have 10–12 stamens.

I wrote to Sir George Watt about his Manipur rhododendrons, and he has been so good as to send to me the manuscript of his descriptions of all the species he met with during his journeying in Manipur. The manuscript came to Europe with his specimens in the eighties of last century but was not published. I give here a transcription of what Sir George Watt says about these forms which with reluctance he placed under *Rh. Maddeni* :—

" This is perhaps the most abundant bush on Japvo, Ching Sow, and other hills above 7500 feet in altitude.

" On the young shoots its elliptical lanceolate leaves are very much larger and broader than on the flowering branches, bright shining green above and green with brown scales, becoming almost ferruginous, below. Under the microscope these spots are seen to be round peltate scales depressed like minute cups ; in the bottom of each is placed a round dark brown shining glandular body surrounded by a thin striated pale-coloured membrane. Flower-buds round, acute, solid, large, dark red and coated with a sticky substance ; bracts reniform broader than long sometimes suddenly and shortly apiculate and having along the centre a band of closely packed scales.

" Flowers appear in June to August and fruit ripens in September. They were described to me as white, and as this together with all the other characters agrees admirably with Hooker's figure xviii [in Sikkim Rhododendrons] and description of *Rh. Maddeni,* I have most reluctantly had to renounce my first impression that this lovely plant was a new species.

" Fruit not 10-celled (as described by Hooker) but 12-celled, bursting into 4–6 portions of one or more carpels and dehiscing from the 12 placental plates which after a time separate upwards from the central axis.

" Seeds very large for a rhododendron. Hooker in his Rhododendrons of the Sikkim Himalaya states that this species is confined to ' the inner ranges, very rare, in thickets of the Lachen and Lachoong rivers at Choongtam.' It is therefore extremely interesting to find that ' this truly superb plant ' is by no means so rare as it has hitherto been thought, and that, although it has taken thirty years to discover the fact, *Rh.*

Maddeni is one of the most abundant bushes in the higher Manipur Hills and in our Naga Hill district. It may be said to make its appearance in the eastern corner of Sikkim and to be spread eastward to the higher Naga Hills and North-Eastern Manipur.

"It was gathered in the Duphla Hills by Mr. Lister (a collector sent out from the Botanic Gardens, Calcutta, in 1875), very imperfect specimens being received. Griffith's Bhotan specimens No. 3507 most probably belong to this species, as also those gathered by Simmons in 1855. Through the want of interest taken in botanical science in India it is to be deplored that the history and distribution of so exceedingly interesting a plant should have practically remained unknown from the date of its original discovery in 1849 to the present day.

"It is very probable that my plants are nearer to the plant introduced by Booth from Bhotan and figured by Hooker in Bot. Mag. t. 5002—*Rh. calophyllum*. Not having seen the flowers of that plant I rely upon foliage entirely, and as far as one can judge from such material it might be better to regard the Manipur plant as *calophyllum*. It seems likely, however, that this species may be regarded as being a Bhotan form of *Maddeni* and not a distinct species, and for both these reasons I have considered it advisable to refer my plants to the more typical and best known form."

Note added 1915.—"I sent to Kew seeds of all the rhododendrons I was able to collect. One grown under the name *Rh. Elliottii*, Watt proved to be *Rh. Maddeni*, and I was assumed to have made a mistake. But here I describe *Rh. Maddeni* as a separate species from *Rh. Elliottii*. I had never any doubt, and so the labels on the seeds must have got changed either by me or the staff at Kew. The Kew plant has been figured and described as *Rh. Maddeni*, var. *obtusifolium* (Bot. Mag. No. 8212).

"G. W."

With reference to Sir George Watt's note:—*Rh. Elliottii* is a plant very different from *Rh. Maddeni*, Hook. f., and its characters have been presented recently by Lace and Smith in Notes from the Royal Botanic Garden, Edinburgh, viii (1914), 214. The *Rh. Maddeni*, var. *obtusifolium*, Hutchinson of the Bot. Mag. t. 8212 does not appeal to me as a form of *Rh. Maddeni*, Hook. f., and I note that Mr. Watson, writing of its cultivation, says: "It differs in habit and several other characters from the Himalayan *Rh. Maddeni* as represented in gardens." As described it differs from *Rh. Maddeni*, Hook. f. in the two distinctive characters to which I have referred on a previous page

—the large calyx about 1.5 cm. or more long and the pubescent filaments of the stamens. The "10 stamens" of the description (both Latin and English) is a misprint; 17–20 stamens are shown in the drawing and are present in specimens which the Director of Kew kindly sent to me. I read no character that would deny Sir George Watt's identification of *Rh. Maddeni*, var. *obtusifolium*, with the plant here described as *Rh. manipurense*.

Rhododendron nematocalyx, Balf. f. et W. W. Sm.

Frutex compactus ad 4 m. altus ramis crassiusculis virgatis folia ad apicem quasi verticillata gerentibus. Rami annotini circ. 4 mm. diam. glabri rubri mox grisei. Alabastra foliaria ignota. Folia petiolata ad 12 cm. longa; lamina crasse coriacea rigida oblonga vel lanceolato-oblonga ad 10.5 cm. longa 3 cm. lata apice acuminata tuberculato-mucronulata margine crasse cartilaginea integra vix recurvata basi breviter cuneata, utrinque glaberrima concolor olivacea et opaca laevis supra concava lateribus a costa media sursum versis venis primariis utrinsecus ad 10 occultis ascendentibus intra marginem curvatis, infra costa media erubescente elevata venis primariis paullo prominulis venularum reticulo ultimo occulto; petiolus ad 1.5 cm. longus erubescens supra anguste sulcatus glaberrimus. Flores in umbellas veras 2–3-floras dispositi; umbellae axillares ad apicem ramorum 3–5-fasciculatae, rhachi ad basim crassa multibracteata; bracteae bracteolaeque forma ignota; pedicelli crassi vix 2 cm. longi stricti divaricati glabri. Calycis cupula parva glabra circ. 1 mm. longa, lobi 5 membranacei brunnei aequales vel subaequales lineari-ligulati longiores ad 1.3 cm. longi 1 mm. lati apice obtusi albo-ciliati vel subaristati breviores saepe longe triangulares. Corolla circ. 4.5 cm. longa infundibuliformis, tubo angusto circ. 1.5 cm. longo extus glabro intus minute puberulo, limbo ampliato 5-lobato, lobis circ. 2.5 cm. longis 1.8 cm. latis subaequalibus oblongo-ovalibus. Stamina 10 inaequalia corolla styloque breviora, longiora circ. 3.8 cm. longa antheris circ. 2.5 mm. longis, filamentis filiformibus basi paullo latioribus et glabris sursum ad apicem tubi corollini pilis vesiculosis indutis eglandulosis. Ovarium glabrum in stylum attenuatum; stylus glaber circ. 2 cm. longus sub stigmate haud expansus; stigma latum discoideum lobulatum. Capsula longa tenuis stylo persistente coronata circ. 3 cm. longa 3 mm. diam. nigro-brunnea glabra.

Species *Rh. oxyphyllo*, Franch. affinis sed staminibus styloque eglandulosis differt; a *Rh. stamineo*, Franch. staminibus inclusis recognoscenda. *Rh. stenaulum*, Balf. f. et W. W. Sm. folia chartacea margine scabrido et venis primariis subpatulis

notata, calycis lobos rarissime ligulatos, corollam majorem, stylum multo breviorem possedit.

W. Yunnan. Hills north of Tengyueh. Open situations in thickets. Alt. 7000 ft. Lat. 25° 15′ N. Compact shrub of 8–12 ft. In fruit. Foliage coriaceous. G. Forrest. No. 7673. May 1912.

The rigid foliage and stiff branches of this species in the dried state recall *Rh. siderophyllum*, Franch., but it is far removed from that species and belongs to an altogether different phylum in the genus. *Rh. nematocalyx* is one of the Stamineum series, and its nearest ally seems to be *Rh. oxyphyllum*, Franch., a plant collected by Prince Henri d'Orleans in South Yunnan between "Muonglé et Keu-ma-tzé," and as yet not known from elsewhere. I have not seen dried specimens of Franchet's *Rh. oxyphyllum* which is said to be in cultivation. None of the living plants that have come to me match the description of his species given by Franchet.

Rhododendron niphargum, Balf. f. et Ward.

Frutex ad 8 m. altus ramis crassis. Ramuli hornotini circ. 5 mm. diam. niveo-tomentosi, annotini glabrescentes vel tomenti vestigiis nigricantibus induti tandem sordide grisei decorticantes. Alabastrorum in tomento immersorum perulae fulvae dorso argenteo-tomentosae margine dense ciliatae intus pilis adpressis plus minusve indutae exteriores circ. 7.5 mm. longae in dimidio inferiore subrotundatae sursum caudatae caudae apice revoluto, interiores ecaudatae subrotundatae circ. 4 mm. diam. Folia breviter petiolata ad 21 cm. longa sub anthesi deflexa; lamina coriacea late oblanceolata vel oblongo-oblanceolata vel oblongo-obovata ad 19.5 cm. longa 6.5 cm. lata apice obtusa corneo-mucronata margine plana perspicue cartilaginea deorsum a quadrante supremo in petiolum gradatim attenuata supra subatro-viridis vix nitens in modum squali corii rugulosa costa media subrubide colorata sulcata venis primariis utrinsecus circ. 15 subsulcatis pinnatim adscendentibus superficie caeteroquin subplana pilorum juvenilium vestigiis plus minusve notata (in juventute pilorum strato niveo tenui integro vestita, pilis ex axi centrali saepe multo elongato a basi ex toto multo atque iterum ramosis ramis tenuibus intertextis floccos mox post evolutionem alabastrorum detersiles facientibus), subtus nivea costa media elevata primo nigro-purpurea puberula deinde straminea glabrescente caeteroquin indumento persistente compacto scintillante subnitente laevi haud favoso bistrato venularum rete occludente et venas primarias elevatas tegente vestita, strati inferi pilis ab apice stipitis brevis horizontaliter et radiatim ramosis ramis pilorum contiguorum vesiculosis brevibus latis plus minusve agglutinatis, strati superi pilis e ramulis

longis tenuibus contortis ab axi communi orientibus et supra stratum inferum late patentibus et extensis haud intertextis constructis (indumentum subfoliare adultum saepe fusco-variculatum est ubi fungorum mycelium brunneum in pilos penetravit); petiolus brevis circ. 1.5 cm. longus crassus sub-erubescens glabrescens sed tomenti juvenilis vestigiis albidis plus minusve praeditus (in juventute ex toto niveo-tomentosus). Flores plurimi (12 vel plures) in umbellam veram vel brevissime racemosam dispositi rhachi plus minusve floccosa; bracteae interiores submembranaceae fulvidae obovato-spathulatae ad 3 cm. longae 8 mm. latae apice cucullatae subtruncatae extus intusque sericeo-pilosae; bracteolae lineares ramentaceae circ. 1 cm. longae 0.5 mm. latae adpresso-pilosae; pedicelli 2 cm. longi saepe breviores validi purpurascentes pilis niveis floccosis plus minusve induti glabrescentes ad apicem obliqui. Calyx subobsoletus glaber cupularis angustus crassus carnosulus vix 1.5 mm. longus margine undulatus vel 5-rotundato-lobulatus. Corolla tubuloso-campanulata pallide rosea circ. 4 cm. longa extus sparsim floccoso-pilosa vel glabrescens intus postice varo uno et maculis coccineis notata minute puberula basi sub-5-gibbosa, lobis 5 subrotundatis emarginatis circ. 1.5 cm. longis 2 cm. latis. Stamina 10 inaequalia longiora circ. 3 cm. longa breviora circ. 1.4 cm., filamentis deorsum latioribus basi minute puberulis, antheris ochraceis circ. 2.5 mm. longis. Gynaeceum circ. 3.3 cm. longum corolla brevius staminibus longius; ovarium olivaceum angustum sursum attenuatum obliquum circ. 7 mm. longum 2 mm. latum nigricans a basi pilis brevibus simplicibus minutissimis albidis nunc sucino-coloratis quasi in glandulas transeuntibus puberulum; stylus glaber in stigma angustum lobulatum paullo expansus. Capsula falciformis circ. 5 cm. longa 3 mm. lata nigro-purpurea glabra subsulcata valvis 5 ab apice dehiscens. Semina sucino-colorata linearia complanata ad 3 mm. longa 0.5 mm. lata ad extremitates cristato-caruncu-lata ad latera tenuissime alata.

Species *Rh. uvarifolio*, Diels affinis sed foliis latioribus obtusis nec acutis nec acuminatis, pedicellis et floribus majoribus corolla intus puberula diversa.

Yunnan. Bei-ma-shan. 12,000–13,000 ft. In fir forests. Irregular tree of 15–20 ft. Flowers pink or very white with one blotch. F. Kingdon Ward. No. 324. June 1913.

Yunnan. Mountains in the N.E. of the Yangtze divide. Alt. 12,000–13,000 ft. Lat. 27° 45′ N. In rhododendron thickets. Shrub of 20–25 ft. Flowers dried, probably crimson. G. Forrest. No. 10,292. July 1913; Alt. 11,000 ft. In pine and rhododendron forests. Shrub of 25 ft. In fruit. G. Forrest; also 10,639. July 1913.

Yunnan. Mountains of the Chungtien plateau. Alt. 11,000–12,000 ft. Lat. 27° 55′ N. In thickets. Shrub of 20 ft. In fruit. G. Forrest. No. 10,914. Aug. 1913; Lat. 27° 35′ N. In open thickets. Shrub of 20–30 ft. Flowers pale lavender-rose or white flushed rose with deep red markings. G. Forrest. No. 12,435. April 1914.

Yunnan. G. Forrest. No. 11,421. Sept. 1913.

Yunnan. Lichiang Range. Alt. 11,000–12,000 ft. Lat. 27° 40′ N. G. Forrest. No. 11,738. Oct. 1913.

Yunnan. Mountains N.W. of Chien Chuan. Alt. 10,000–11,000 ft. Lat. 26° 30′ N. Flowers? Open pine forests. Shrub of 10 ft. G. Forrest. No. 13,035. July 1914.

This is one of the rhododendrons which attracts attention by the snow-white under-surface of the rather long mature leaves. Many of the leaves show a dingy spotting and may take on a brown colour. This is due to the attack of an ascomycetous fungus which spreads all through the indumentum. The hairs of the upper stratum of indumentum are often very long, and the delicate branches ascend as loose not interwoven threads above the lower stratum, which forms a typical roof over the epidermis. The short stalks of the hairs appear as so many pillars supporting the vesicular branches spreading out horizontally from the top, and the branches of adjacent hairs becoming agglutinated form the smooth scintillating indumental surface. In the chamber covered by these matted branches the stomata project as domes above the epidermal surface.

In this indumental character of the mature leaves *Rh. niphargum* resembles *Rh. uvarifolium*, Diels (1912),* as it does in such other features as the many-flowered compact globose truss of flowers at the end of thick branches encircled by a rosette of more or less deflexing leaves, the small glabrous calyx, 5-lobed campanulate corolla, 10 unequal stamens with puberulous filaments, thin dark-coloured ovary puberulous with very short vesicular pointed hairs, the style glabrous slightly longer than stamens, shorter than corolla, and ending in a stigma hardly wider than the style itself which does not expand clavately beneath it. *Rh. niphargum* has the foliage-buds and all young parts enclosed in a snow-white indumentum—and I take it that in nature these show up after the fashion of those of the East Himalayan *Rh. niveum*, Hook. f. and the Szechwan *Rh. floribundum*, Franch.—the striking beauty of which matches if it does not surpass that of their flowers. Whether this is the

* *Rh. Monbeigi*, Rehd. et Wilson, Plantae Wilsonianae, i (1913), 536, is this species. Specimens of it came to Edinburgh from Père Monbeig in 1907, and I have compared them with those from the same source in Kew Herbarium under the numbers cited by Rehder and Wilson.

case also in *Rh. uvarifolium* we do not know, because specimens of young shoots of this species have not yet come to Europe. The fruit of *Rh. niphargum* is of the narrow curved type of capsule, and in the absence of direct evidence I think we may conclude from the form of the ovary that the same form marks the fruit of *Rh. uvarifolium.* My reference to *Rh. niveum* and *Rh. floribundum* must not be interpreted as necessarily meaning that these species are of the immediate alliance of the one I am speaking of. Passing observation might suggest such a relationship, but analysis brings out characters which in the present state of our appreciation of phyletic marks in the genus seem to question a connection, for the leaf-indumentum of *Rh. niveum* as well as of *Rh. floribundum* is unistrate, composed of hairs branching somewhat loosely from the base upwards—of different shape in the two species—and constituting a somewhat woolly surface, the pedicels are woolly, as is the small calyx, the staminal filaments are glabrous, the ovary is coated with fasciated long erect white hairs in *Rh. niveum,* with solitary long pointed white stiff hairs in *Rh. floribundum,* and then the capsule is a short straight stout one. At the same time I may note that the Western Szechwan *Rh. Hunnewellianum,* Rehd. et Wilson has the same general form of elongated leaf (only smaller), with snow-white indumentum constructed like that of our two species—*Rh. niphargum* and *Rh. uvarifolium*—but the calyx is glandular and pubescent, the widely campanulate 5-lobed corolla is glandular outside, the 10 staminal filaments are puberulous and glandular, the ovary densely covered with fasciate hairs, the style glandular and pubescent at the base. Apart from the character of the glands, which nowhere shows in any of the species previously mentioned, *Rh. Hunnewellianum* seems to be a form somewhere intermediate to *Rh. niveum* (its ovarian covering taking it to this species rather than to *Rh. floribundum*) and *Rh. niphargum* and its fellows. Neither *Rh. niveum* and *Rh. floribundum* nor *Rh. uvarifolium* and *Rh. niphargum* show any glands, and this eglandulose character serves as a definite diagnostic mark from the Himalayan *Rh. arboreum,* Wall. and Yunnan *Rh. Delavayi,* Franch., two species which by their bullate leaves with pale-coloured indumentum and the small compact trussed flowers, the short tomentose pedicels, the small more or less floccose calyx, 5-lobed tubular-campanulate corolla, 10 stamens with glabrous filaments, ovary tomentosely covered with fasciate hairs, glabrous style, short stout thick capsule take us towards *Rh. niveum* and *Rh. floribundum.*

Seedlings of *Rh. niphargum* have been raised from Forrest's seeds and are very different from the mature plant. They show not a trace of the white indumentum even when three years

old, and the under-surface of the leaves is a brilliant red coated with glands of a particularly sticky character. See what I say in Trans. Bot. Soc. Edin., xxvii (1917), 224.

Rhododendron oporinum, Balf. f. et Ward.

Frutex multiramosus floribus serotinis ubique plus minusve lepidotus squamis peltatis magnis fere ad 0.5 mm. diam. breviter stipitatis ex umbone magno institaque integra fere aequilata aedificatis primo niveis tandem aurantiacis vel rubro-resinosis ultimo brunneis et nigrescentibus. Ramuli hornotini et annotini circ. 2 mm. diam. nigricantes contiguo-lepidoti epilosi seniores sordide grisei squamarum vestigiis nigris verruculosi deinde decorticantes. Alabastrorum oblongorum angustorum circ. 3.5 mm. diam. perulae pallide brunneae exteriores crustaceae ovatae vel subrotundatae 3.5 mm. longae carinatae obtusae vel subtruncatae mucronulatae dorso lepidotae et puberulae interiores membranaceae obovato-spathulatae circ. 1.5 cm. longae 5 mm. latae carinatae truncatae mucronulatae obscure denticulatae minutissime ciliatae dorso lepidotae et puberulae ; folia juvenilia convoluta utrinque squamis albidis latis imbricatis lepidota costa media supra dense puberula. Folia ad 8.5 cm. longa petiolata ; lamina coriacea late lanceolata vel oblongo-lanceolata ad 7.5 cm. longa 3 cm. lata apice longe corneo-apiculata (apiculo circ. 2 mm. longo) margine anguste cartilaginea paullo recurva basi obtusa vix rotundata vel truncatula nec angustata, supra atro-viridis subvernicoso-nitida in modum squali corii rugulosa ubique squamulis marcidis griseo-albidis vel rubro-resinosis vel nigricantibus obtecta costa media subrubida paullo sulcata sulco pilis albidis strictis brevibus simplicibus vel stellatim ramosis cum squamis marcidis obducto venis primariis utrinsecus circ. 12 occultis, subtus pallidior fulva epilosa squamis uniformibus persistentibus bicoloratis —albidis et brunneis— fere contiguis lepidota intervallis epidermicis nudis olivaceis papillis depresso-petasiformibus praeditis, costa media elevata rubida plus minusve lepidota epilosa venis primariis et venularum reti occultis ; petiolus circ. 1.5 cm. longus crassus contiguo-lepidotus supra sulcatus sulco puberulo ubique inter squamas plus minusve conspersas pilis obductus. Flores racemo-umbellam ad 6-floram terminalem construentes rhachi circ. 7 mm. longa lepidota et puberula ; bracteae fulvidae crustaceo-coriaceae dorso lepidotae intus adpresso-puberulae margine breviter albo-ciliatae, steriles late ovatae vel rotundatae carinatae apiculatae, fertiles obovato-spathulatae cucullatae circ. 1 cm. longae 4 mm. latae subtruncatae ; bracteolae ramentaceae lineari-subclavatae acutae uninerviae brunneae circ. 1.2 cm. longae 1 mm. latae intus

glabrae extus lepidotae et breviter adpresso-pilosae ; pedicelli ad 1.7 cm. longi graciles nigricantes albido-lepidoti epilosi apice haud obliqui. Calyx cupularis parvus patens circ. 2 mm. longus carnosulus in lobos 5 deltoideos vel subrotundatos vel ovatos circ. 1 mm. longos extus dense imbricatim lepidotos et apicem versus puberulos margine plus minusve albido-ciliatos et squameo-fimbriatos divisus. Corolla pallide rosea intus postice varo coccineo notata eleganter campanulata circ. 2.3 cm. longa extus puberula et ex toto lepidota intus puberula in lobos 5 rotundatos circ. 1 cm. longos et latos subcrenulatos divisus. Stamina 10 inaequalia corolla breviora, longiora circ. 2.1 cm. longa breviora 1.2 cm., filamentis deorsum dilatatis ima basi (1 mm.) nuda sursum ad medium villosis in parte suprema glabris, antheris purpureis circ. 2.5 mm. longis. Discus 1 mm. longus puberulus. Gynaeceum circ. 2 cm. longum staminibus longioribus brevius ; ovarium circ. 5 mm. longum conoideum nigrum lepidibus aurantiacis omnino vestitum epilosum ; stylus ad basim pilosus sub stigmate purpureo lobulato fere subdiscoideo vix expansus.

Species *Rh. pholidoto*, Balf. f. et W. W. Sm. affinis, foliis supra subvernicosis viscidis, corolla pallide rosea extus pilosa distinguenda.

E. Upper Burma. Wulaw Pass. Valley of Naung Chaung. 11,000–12,000 ft. On open ridge amongst several of scrub rhododendrons. Flowers rose-pink with a dark-red patch at base of corolla. Leaves glandular. F. Kingdon Ward. No. 1906. 27.8.14. Very late for a rhododendron.

This species resembles most nearly *Rh. pholidotum*, Balf. f. et W. W. Sm., from the eastern flank of the Tali Range. From it and from all others in the Heliolepis series (see p. 113) it should be distinguishable by the glutinous upper surface of the leaves—Mr. Ward makes special reference to the glandular leaves, but it is a feature that is not conspicuous in dried material—and by the corolla, which is pilose as well as lepidote on the outside. I do not discover any special glands on the leaves. There are the lepidote scales which become full of red secretion as they olden and might be the organs which cause the stickiness. This would not be a common phenomenon on the leaf in species of rhododendron, although the scales on the ovary frequently seal together by their secretion the surface of the corolla-tube in dried specimens. Mr. Tagg tells me that he has failed so far to obtain evidence that there is natural exudation from the peltato scales. He suggests that exudation is probably always the result of pressure from the outside. If this be so some other origin for the stickiness of the leaf must be searched for in *Rh. oporinum.*

Rhododendron phaeochrysum, Balf. f. et W. W. Sm.

Frutex ad 4.5 m. altus ramis crassis. Ramuli juveniles pilis floccosis multo ramosis pilorum ramulis brevibus latis albidis vel secretione rubra vel lutea impletis nunc sebaceis dense vestiti, annotini fere glabri subnitentes circ. 5 mm. diam. Alabastrorum longorum ovoideorum acutorum haud viscidorum perulae extimae latae ovatae circ. 1.2 cm. longae pergamentaceae flavido-virides carinatae breviter apiculatae extus fere glabrae intus sericeo-pilosae margine apicem versus ciliatae, interiores membranaceae elongatae circ. 3 cm. longae 1 cm. latae vel ultra convolutae obovato-spathulatae saepe petiolatae flavidae, intimae fulvidae; folia juvenilia revoluta utrinque floccis albidis et rubris saepe sebaceis dense vestita. Folia petiolata ad 13 cm. longa sub anthesi deflexa; lamina coriacea oblonga vel anguste ovato-oblonga ad 12 cm. longa vix 5 cm. lata apice angustata obtusa corneo-mucronulata margine cartilaginea plana basi late obtusa vel subrotundata, supra atro-viridis glabra indumenti juvenilis vestigiis minutissimis notata costa media venisque primariis utrinsecus circ. 13 sulcatis caeteroquin reticulatim rugulosa papillis minutis epidermicis subasperata, subtus laete aureo-brunnea costa media elevata venis primariis obscuratis ubique indumento unistrato persistente compacto (sed superficie quasi coactilim subasperata) e pilis floccosis a stipite subbrevi ramos plures latiusculos et longiusculos radiantes implexos haud late patentes emittentibus constructo vestita; petiolus crassus circ. 1 cm. longus supra sulcatus primo floccosim tomentosus tandem fere glaber. Flores racemoso-umbellati circ. 15 in quaque inflorescentia rhachi circ. 1.5 cm. longa glaberrima; bracteae exteriores mox deciduae ignotae, interiores fertiles sub anthesi plus minusve persistentes obovato-oblongae circ. 3.5 cm. longae 1.5 cm. latae cucullatae extus intusque dense albo-sericeae; bracteolae parvae circ. 7 mm. longae filiformes sericeo-puberulae cristaque apicali notatae; pedicelli circ. 2 cm. longi validi olivacei glabri vel floccis paucis conspersi. Calyx minutus circ. 1 mm. longus cupularis margine vix 5-dentatus glaber. Corolla infundibuliformi-campanulata alba roseo-suffusa et postice maculis parvulis numerosis notata circ. 4.5 cm. longa extus glabra intus profuse pubescens basi 5-gibbosa, lobis 5 rotundatis circ. 1.5 cm. longis 2.4 cm. latis emarginatis undulato-crenulatis. Stamina 10 (–11) inaequalia, 5 multo minora circ. 1.2 cm. longa antheris 2.5 mm. longis, 5 longiora corolla breviora circ. 2.3 cm. longa antheris 3.5 mm. longis, filamentis infra dilatatis dense pubescentibus. Gynaeceum circ. 3.2 cm. longum staminibus longius corolla brevius; ovarium conoideum sulcatum nigrescens minutissime papillatum glaberrimum circ. 7 mm. longum 3.5 mm. latum;

stylus glaber flavido-ruber sub stigmate grosse lobulato cupularis.

Species *Rh. Beesiano*, Diels et *Rh. fulvo*, Balf. f. et W. W. Sm. affinis, ab ambobus foliis oblongis vel ovato-oblongis, indumenti subfoliaris superficie coactilim asperata, petiolo brevi, corolla intus pubescente multi-maculata, filamentis staminum dense pubescentibus recedens ; etiam ab hoc foliis supra rugulosis et minute papillatis subtus pilis haud in modum peniculi capitati constructis vestitis, petiolo glabrescente, inflorescentia racemosa ; et ab illo alabastris eviscidis, costa media infra tomentosa indumento pilorum implexorum persistente, ovario glabro bene distincta.

E.N.W. Yunnan. Mountains in the N.E. of the Yangtze bend. Alt. 11,000–12,000 ft. Lat. 27° 45′ N. In thickets. Shrub of 6–10 ft. Flowers white flushed rose exterior with deep crimson markings. G. Forrest. No. 10,547. July 1913.

E.N.W. Yunnan. Mountains of the Chungtien plateau. Alt. 12,000 ft. Lat. 27° 30′ N. In rhododendron thickets. Shrub of 10–15 ft. Flowers white flushed rose with minute crimson markings. G. Forrest. No. 12,651. June 1914.

The rich golden-brown tint of the under-leaf indumentum is a conspicuous distinctive character of *Rh. phaeochrysum* amongst like forms, of which the likest are *Rh. Beesianum*, Diels and *Rh. fulvum*, Balf. f. et W. W. Sm. These three species cannot be mistaken one for the other. *Rh. lacteum*, Franch., which is also an ally, has the rosette-haired indumentum of *Rh. Beesianum* not the matted-haired type of *Rh. phaeochrysum*, and then it has broad obovate leaves, yellow and creamy-yellow flowers. The only other species which I mention here as an ally is *Rh. Traillianum*, Forrest et W. W. Sm., and it has the powder-like indumentum of *Rh. Beesianum* not the felted indumentum of *Rh. phaeochrysum* ; also the indumentum of *Rh. Traillianum* is at first grey-green and turns to red-brown in the older leaves.

Rhododendron pholidotum, Balf. f. et W. W. Sm.

Frutex ad 2.5 m. altus ubique plus minusve lepidotus lepidibus peltatis magnis circ. 0.75 mm. latis breviter stipitatis ex umbone magno convexo institaque integra aequilata aedificatis primo niveis tandem ex parte brunneo-coloratis. Ramuli hornotini atro-purpurei circ. 2.5 mm. diam. epilosi subcontiguo-lepidoti seniores nigrescentes lepidum vestigiis subverruculosi tandem sordide grisei decorticantes. Alabastrorum oblongorum angustorum acutorum circ. 3 mm. diam. perulae exteriores fulvae vel pallide brunneae crustaceo-coriaceae late ovatae vel subrotundatae cucullatae circ. 3 mm. longae dorso lepidotae

minutissime ciliatae, interiores saepe virides oblongo-spathulatae truncatae membranaceae circ. 1.5 cm. longae 4 mm. latae dorso lepidotae et puberulae intus adpresso-puberulae margine hirsuto-ciliatae ; folia juvenilia convoluta utrinque squamis contiguis albidis induta. Folia petiolata ad 7 cm. longa ; lamina coriacea crassa anguste ovata vel oblongo-ovata vel oblonga vel ovato-lanceolata ad 6 cm. longa 2.3 cm. lata ad apicem acutam longe corneo-mucronatam attenuata margine anguste cartilaginea basi late obtusa nunc subtruncatula, supra atro-viridis subopaca subrugulosa pseudoglaberrima squamarum vestigiis griseis marcidis praedita costa media subrubida paullo sulcata sulco pilis albidis strictis simplicibus vel stellatis cum squamis peltatis marcidis plus minusve impleto venis primariis utrinsecus circ. 10 vix conspicuis, subtus olivaceo-brunnea ad maturitatem punctulata costa media erubescente elevata sparsim lepidota epilosa caeteroquin squamis peltatis uniformibus superficialibus persistentibus numerosis vix contiguis bicoloribus ex parte maxima ad umbonem solum brunneo-coloratis, paginae intervallis nudis olivaceis papillis epidermicis depresso-petasiformibus praeditis ; petiolus circ. 1 cm. longus dense lepidotus vel squamarum foveolis notatus supra sulcatus sulco pilis strictis impleto. Flores leviter zygomorphi ad 5 racemoso-umbellati rhachi brevi circ. 4 mm. longa lepidota et puberula ; bracteae mox deciduae ignotae ; bracteolae pubescentes lepidotae et ciliatae ramentaceae ad 9 mm. longae circ. 2 mm. latae in dimidio infero filiformes in dimidio supero oblongae ; pedicelli stricti divaricati circ. 2 cm. longi atro-purpurei laxe albido-lepidoti epilosi. Calyx cupularis ad 5 mm. longus extus puberulus, cupula atro-purpurea carnosula extus dense lepidota, lobis 5 submembranaceis rubris deltoideis vel ovatis vel oblongis vel sublinearibus ad 3.5 mm. longis obtusis vel acutis elepidotis vel sparsim vel dense lepidotis margine eciliatis vel minutissime cilatis vel pilis contortis hirsuto-ciliatis. Corolla parva rosea vel roseo-purpurea postice rubro-maculata aperte campanulata ad 3 cm. longa sed saepe vix 2 cm. extus ex toto lepidota intus dense puberula, lobis 5 rotundatis posterioribus circ. 1 cm. longis et latis. Stamina 10 inaequalia longiora ad 2.3 cm. longa breviora 1 cm., filamentis deorsum latioribus ima basi glabris sursum ad verticem ovarii pilis strictis horizontaliter patentibus copiose obtectis, antheris circ. 2 mm. longis. Gynaeceum ad 2 cm. longum ; ovarium conoideum circ. 5 mm. longum nigricans squamis pallido-viridibus dense lepidotum ad apicem albido-pilosum ; stylus ruber staminibus longioribus brevior, brevioribus longior, nudus nunc basi sparsim pilosus ad apicem subclavatus ; stigma discoideum lobulatum stylo latius.

Species *Rh. brevistylo,* Franch. affinis quod differt perulis

interioribus ligulatis vel ligulato-spathulatis intus dense puberulis margine minute ciliatis, foliis majoribus basi cuneatim vel obtuse angustatis neque rotundatis subtus ad maturitatem haud punctulatis, racemo-umbellae rhachi longiore, pedicellis calyceque genitalibusque brevioribus, calyce sparsim puberulo, corolla roseo-alba, ovario pilis paucis coronato, stylo ad medium piloso.

E.N.W. Yunnan. Tali Range. Eastern flank. Open situations amongst scrub. Lat. 25° 40′ N. Alt. 10,000–11,000 ft. Shrub of 3–5 ft. Flowers rose-purple. G. Forrest. No. 4162. Aug. 1906.

E.N.W. Yunnan. Tali Range. Eastern flank. Rhododendron scrub. Alt. 12,000 ft. Lat. 25° 40′ N. Shrub of 4–8 ft. Flowers rose with few markings. G. Forrest. No. 6762. July 1910.

Yunnan. Alt. 11,000 ft. Lat. 25° 40′ N. Dupl. of 1906-1910. G. Forrest. No. 11,657. July 1913.

Rh. pholidotum is like *Rh. invictum*, but the puberulous bases of the exserted style and stamens of that species are very different. Its nearest ally is perhaps *Rh. brevistylum*. There should be no danger of confusion of *Rh. pholidotum* with any other species in the Heliolepis series (see p. 113). Apart from flower-colour distinction, it wants the viscid upper-leaf surface and the hairs outside the corolla of *Rh. oporinum*; it has not the narrow-based leaves of *Rh. brevistylum*; it has not the large leaves and distantly placed scales of *Rh. heliolepis*; the size of leaf as well as the small campanulate—not tubular-campanulate—corolla tell it at once from *Rh. plebeium*; *Rh. fumidum* has a green spotted corolla, a calyx epilose outside and an epilose ovary; *Rh. rubiginosum* has conspicuously biform under-leaf scales. It is the Middle West Yunnan (Tali) representative of the series, and is in cultivation.

287 **Rhododendron pilovittatum,** Balf. f. et W. W. Sm.

Frutex robustus ad 3 m. altus. Ramuli juveniles circ. 5 mm. diam. dense glanduloso-lanati testacei rubro-punctati indumento e pilis copiose et dendriformiter ramosis intertextis aedificato pilorum ramis aliis albidis vel rubris brevibus acutis aliis in glandulam oblongo-ovoideam vel clavatam rubram nitentem mutatis, vetustiores per annos plures indumento marcescente nigricante notati tandem glabrescentes fulvidi decorticantes. Alabastra acuta juvenilia in indumentum testaceum persimile immersa. Folia petiolata ad 10 cm. longa (in speciminibus nostris forsan vix typica); lamina ad 8.5 cm. longa 4 cm. lata oblonga acutiuscula corneo-mucronata margine plana cartilaginea rubida basi obtusa vel subtruncatula, supra olivacea

vel pallide viridis costa media rubro-purpurea anguste sulcata sulco floccis fuscis plus minusve impleto venis primariis utrinsecus ad 15 venularumque reti immersis caeteroquin laevis pilorum floccis fulvidis detersilibus ramulis saepe rubro-glandulosis plus minusve obtecta, subtus indumento bistrato persistente albido favoso piloso et glanduloso venas primarias et venularum rete occludente vestita, strati superi pilis dendriformibus laxe ramosis, inferi rosulatis implexis, glandulis clavatis rubris nitentibus inter pilos conspersis, costa media erubescente elevata; petiolus circ. 1.5 cm. longus crassus testaceus glanduloso-lanatus. Flores intense sanguinei plures racemoso-umbellatim dispositi rhachi copiose rubro-glandulosa glandulis breviter stipitatis; bracteae exteriores magnae ovatae obtusae cucullatae coriaceae fulvidae ad 2.5 cm. longae circ. 1.5 cm. latae extus intusque pilis longis simplicibus undulatis dense sericeae, interiores angustiores dense rubro-glandulosae viscidae; bracteolae claviformes circ. 1 cm. longae rubro-glandulosae; pedicelli purpurei circ. 2 cm. longi (post anthesin aucti) rubro-glandulosi et floccosim pilosi. Calyx parvus circ. 3 mm. longus in lobos 5 inaequales postero-laterales majores ovatos circ. 1.5 mm. longos extus dense glandulosos et pilis floccosis obtectos divisus. Corolla intense sanguinea carnosula tubuloso-campanulata circ. 3 cm. longa intus glabra extus vittis quinque pilorum contortorum intertextorum detersilium centropetalis lineata, lobis 5 rotundatis profunde emarginatis circ. 1.3 cm. longis et latis. Stamina 10 inaequalia longiora circ. 2.5 cm. longa, filamentis glabris, antheris parvis circ. 1.5 mm. longis. Gynaeceum circ. 2.8 cm. longum; ovarium nigricans circ. 5 mm. longum tunica crassa subglobosa glandulosa lanata albida occultum; stylus glaber staminibus paullo longior corolla paullo brevior; stigma lobulatum vix stylo latius.

Species forsan ex affinitate *Rh. sanguinei*, Franch. foliorum indumento ex parte glanduloso, corolla extus pilo-vittata notata.

W. Yunnan. On the Yung-peh Mountains. Alt. 9000 ft. Lat. 26° 45′ N. Open dry situations. Shrub of 10 ft. Flowers deep crimson. G. Forrest. No. 12,745. June 1914.

This fine species is one of the rhododendrons with fairly large leaves, the under-surface of which is clad with a bright white indumentum. The conspicuous character for diagnosis of *Rh. pilovittatum* is that which gives it the name. The middle line of each petal is occupied by a band of curled hairs which run right down from the free lobe to the base of the corolla-tube. The hairs often fall off early.

Rhododendron plebeium, Balf. f. et W. W. Sm.

Frutex ad 3.5 m. altus pauciramosus sigillato-lepidotus. Ramuli hornotini circ. 2 mm. diam. rubro-purpurei lepidibus albis magnis fere contiguis vestiti epilosi mox nigricantes lepidumque vestigiis notati tandem sordide grisei decorticantes. Alabastrorum perulae exteriores fulvidae crasse coriaceae plus minusve rotundatae circ. 4 mm. longae et latae carinatae submucronulatae extus lepidotae intus apicem versus sericeae margine ciliatae per gradus in perulas intimas virescentes membranaceas lanceolatas petiolatas acuminatas tuberculo-terminatas circ. 2.5 cm. longas 7 mm. latas haud mox deciduas intus copiose pubescentes extus lepidotas margine pilis mollibus ciliatas transeuntes ; folia juvenilia convoluta utrinque lepidibus latis albidis contiguis subimbricatis induta (lepidum umbone convexo instita integra) costa media supra puberula. Folia petiolata ad 10 cm. longa ; lamina chartacea oblonga vel elliptico-oblonga vel ovato-oblonga ad 8.5 cm. longa 4 cm. lata saepe multo minor apice acuminata mucrone corneo circ. 1 mm. longo terminata margine angustissime cartilaginea plana basi rotundata nunc subtruncata, supra atro-viridis lepidum fere contiguorum juvenilium vestigiis membranaceis griseo-furfuracea costa media leviter sulcata sulco puberulo nervis primariis utrinsecus ad 8 vix distinctis, subtus olivacea lepidota lepidibus magnis albidis et sucino-coloratis vel brunneis intermixtis discontiguis persistentibus intervallorum papillis petasiformibus subscintillantibus, costa media erubescente dense lepidota epilosa venularum reti occulto ; petiolus circ. 1.5 cm. longus crassus albo-lepidotus sulco puberulo. Flores circ. 5 in umbellam brevissime racemosam inter folia ramulorum subfloralium praecocium immersam dispositi rhachi ad 8 mm. longa lepidota et puberula ; bracteae caducae steriles extimae crassae pallide brunneae a basi subamplexicauli acuminatae apice recurvae circ. 1.2 cm. longae carinatae dense imbricatim griseo-lepidotae, interiores late ovatae cucullatae et acuminatae, intimae oblongae subobovatae pallide brunneae cucullatae truncatae circ. 1.5 cm. longae 8 mm. latae extus lepidotae dense albo-ciliatae ; bracteolae bracteas paullo superantes lineares acuminatae uninerviae plus minusve pilosae superne latiores ibique dorso lepidotae ; pedicelli stricti validi grosse albo-lepidoti circ. 1.8 cm. longi epilosi. Calyx cupularis extus lepidotus et puberulus circ. 2 mm. longus margine undulatus vix 5-lobatus, lobis submembranaceis rubidis extus plus minusve puberulis margine squameo-fimbriatis et pilis brevibus sparsissime ciliatis. Corolla rosea coccineo-notata subtubuloso-campanulata sursum ampliata circ. 3 cm. longa extus copiose lepidota, tubo intus ex toto dense pubescente, lobis 5 suberectis ovatis vel oblongo-

ovatis subcrenulatis apice obtusis vel rotundatis circ. 1.1 cm. longis. 9 mm. latis. Stamina 10 inaequalia, longiora circ. 2.7 cm. longa antheris 3 mm. longis breviora circ. 1.7 cm. longa antheris 1.5 mm. longis, filamentis deorsum latioribus a basi ima nuda sursum ad medium profuse hirsutis. Discus ad 1 mm. longus puberulus. Gynaeceum circ. 2.7 cm. longum corolla paullo brevius staminaque longiora subaequans ; ovarium 4 mm. longum conoideum dense albido-lepidotum epilosum ; stylus in dimidio infero pilosus ad apicem in stigma lobulatum clavatim ampliatus. Capsula oblonga subcylindrica vel sursum paullo attenuata brevis crassa cinereo-olivacea albo-lepidota circ. 1.1 cm. longa 5 mm. diam. 5-sulcata calyce paullo aucto basi cincta ab apice valvis 5 dehiscens. Semina rubro-brunnea fusiformia circ. 1.25 mm. longa exalata vix carunculata.

Species *Rh. heliolepidi,* Franch. affinis foliorum lepidibus haud distantibus corolla tubuloso-campanulata recognoscenda.

W. Yunnan. Shweli-Salween divide. Western flank. Lat. 25° 20′ N. Alt. 10,000 ft. In rhododendron forest. Shrub of 4–8 ft. In fruit. No. 8938 ; alt. 10,000 ft. Open rocky situations. Shrub of 4–6 ft. Flowers rose. No. 8976 ; alt. 10,000–11,000 ft. In rhododendron forest. Shrub of 5–9 ft. Flowers rose. No. 9060. G. Forrest. Aug. 1912.

W. Yunnan. Shweli-Salween divide. Western flank. Lat. 25° 30′ N. Alt. 10,000 ft. In mixed scrub and rhododendron thickets. Shrub of 10–12 ft. Flowers rose with deep crimson markings. G. Forrest. No. 11,970. June 1913.

A well-distinguished species, the most southerly of the Heliolepis series, finding perhaps its nearest relation within the series in *Rh. heliolepis* itself. Like that plant it has broad leaves, but the surface scales are much more numerous and much closer set and give a diagnostic mark at sight. Another easily seen differential character is the tubular-campanulate corolla and the shorter ovary. Altogether *Rh. plebeium* is a more lepidote plant than *Rh. heliolepis.*

The plant is in cultivation, raised by Mr. J. C. Williams of Caerhays Castle from seed collected by Forrest.

Rhododendron rarosquameum, Balf. f.

Frutex ad 1 m. altus. Rami annotini rubri subglauco-ceracei epilosi elepidoti circ. 1.5 mm. diam. Alabastrorum foliarium angustorum fusiformium acutorum circ. 2.5 mm. diam. perulae exteriores sub evolutione deciduae crustaceae brunneae late ovatae acutae vel elongatae subspathulatae mucronulatae carinatae dorso puberulae et lepidotae intus apicem versus adpresso-sericeae margine ad apicem ciliatae, interiores diu persistentes inter se distantes membranaceae

viridi-flavidae ligulatae vel anguste spathulatae circ. 1.1 cm. longae 2 mm. latae subapiculatae dorso lepidotae margine ciliatae intus paullo puberulae superne pilis adpressis praeditae ; folia juvenilia convoluta supra epilosa (costa media basi pilis paucis brevibus excepta) et squamis paucis peltatis rufo-coloratis lepidota, infra epilosa elepidota (costa media squamis paucis magnis peltatis translucentibus excepta) ; petiolus juvenilis supra elepidotus sulcatus sulco sparsim puberulo subtus lepidotus. Folia petiolata ad 6.2 cm. longa ; lamina coriacea rigida variabilis a forma lanceolata ad ellipticam et elliptico-oblongam transiens ad 5.5 cm. longa 2 cm. lata apice rotundata vel obtusa vel attenuata et acuta vel acuminata mucrone hydathodali terminata vel subapiculata apiculo 0.5 mm. longo margine cartilaginea recurva basi cuneata vel obtusa vel rotundata, supra laete viridis subnitida glaberrima nunc squamarum juvenilium vestigiis obscure notata costa media paullo sulcata venis primariis utrinsecus circ. 8 paullo conspicuis, subtus pallidior griseo-viridis subglauca costa media elevata straminea elepidota venarum reti obscuro caeteroquin squamis peltatis haud scintillantibus brunneis 0.5–1 mm. vel ultra distantibus lepidota squamis ex umbone concavo institaque angusta aedificatis ; petiolus circ. 7 mm. longus supra sulcatus sulco epiloso (vel sparsissime piloso) subtus squamarum vestigiis obsitus. Flores in umbellas solitarias terminales 4–5-floras dispositi ; bracteae deciduae ignotae ; bracteolae brunneae anguste clavatae circ. 7 mm. longae pedicellis breviores puberulae dorso elepidotae ciliatae et albido-cristatae ; pedicelli erubescentes stricti circ. 1 cm. longi epilosi et elepidoti vel squamis paucissimis conspersi. Calyx minutus glaber circ. 1 mm. longus cupula margine brunnea undulata semilunatim 5-lobatula. Corolla obliqua pallide violacea postice maculata circ. 2.5 cm. longa extus elepidota epilosa, tubo infundibuliformi antice circ. 5 mm. longo intus puberulo sursum in limbum 5-lobatum expanso, lobis inaequalibus ellipticis vel elliptico-oblongis apice rotundatis subcrenulatis postico minore circ. 1.5 cm. longo 9 mm. lato antero-lateralibus majoribus. Stamina 10 inaequalia longiora circ. 2.8 cm. longa corollam superantes antheris pallide roseis oblongis circ. 2 mm. longis, breviora circ. 1.7 cm. longa antheris subglobosis circ. 1.25 mm. diam., filamentis filiformibus tenuibus deorsum paullo dilatatis supra basim nudam paullo annulatim puberulis. Discus minute puberulus. Gynaeceum circ. 3 cm. longum corollam staminaque superans ; ovarium atro-rubens conoideum circ. 2.5 mm. longum dense lepidotum ; stylus longus tenuis ruber glaber sub stigmate atro-purpureo discoideo lobulato parvo paullo expansus.

Species notis sequentibus recognoscenda :—ramulis elepidotis, foliis parvis, squamis subfoliaribus paucis distantibus, costa media supra epilosa, umbellis terminalibus solitariis, corolla extus elepidota, staminibus 10 longioribus exsertis, stylo longissimo tenui.

E.N.E. Yunnan. Back of Io-chow. Alt. 3200 m. Shrub about 0.60 m. high with small leaves and pale violet flowers. Maire. May. In Herb. Paris, Edin., Léveillé.

E.N.E. Yunnan. Io-chow. Alt. 3200 m. Rhododendron about 1 m. high with small leaves. Flowers blue. May. Maire. In Herb. Edin. No. 63.

E.N.E. Yunnan. Rocks on Mountains of Se-long-tsin. Alt. 3200 m. Shrub of 0.70 m. Maire. May. In Herb. Edin. No. 33.

E.N.E. Yunnan. Rocks of the Mountains at Pa-long-tsin. 0.80 m. Flowers violet. Maire. June. In Herb. Edin. No. 34.

E.N.E. Yunnan. Mountains of Mo-tsou. Alt. 2890 m. Shrub. Flowers violet. Maire. April. In Herb. Edin. No. 139.

E.N.E. Yunnan. Rocks of Ma-hong. Alt. 2800 m. Shrub. Flowers blue. Maire. May. In Herb. Edin. No. 220.

E.N.E. Yunnan. Near Niou Ko Tien. Shrub 0,60–1 m. Flowers violet. Maire. May 1911. In Herb. Léveillé.

This seems to be a widespread species of rhododendron in the N.E. of Yunnan, and it shows much variation in form of foliage. Specimens with acuminate leaves certainly look very different from those with leaves rounded at the apex, but the considerable number of specimens I have had for examination show all stages of transition. The somewhat isolated brown peltate scales on the glaucous green under-leaf surface is characteristic, and then the nonfasciculate inflorescence, the elepidote corolla, the slender filaments of the stamens and long slender style give a combination of characters that I find nowhere else. The species I take to be one of the small-flowered ones which are more or less allied to *Rh. rigidum*, Franch., some of which have not been described. I am not yet in a position to fix precisely its relationships.

Rhododendron rasile, Balf. f. et W. W. Sm.

Frutex ad 2.5 m. altus. Ramuli annotini glaberrimi crassi circ. 7 mm. diam. recti purpurei ceraceo-glauci nitentes. Alabastrorum terminalium globosorum circ. 8 mm. diam. perulae exteriores atro-purpureae, extimae ovato-acuminatae circ. 7 mm. longae 5 mm. latae dorso rubro-glandulosae vernicosae, interiores latiores rotundatae apiculatae et ciliatae. Folia petiolata ad 20

cm. longa ; lamina oblonga ad 17 cm. longa circ. 7 cm. lata apice obtusa mucronata margine cartilaginea basi aequilateralis vel inaequilateralis (lobis subrotundatis vel late obtusis saepe plus minusve decurrentibus), supra rubido-viridis opaca glaberrima costa media purpurea sulcata venis primariis utrinsecus circ. 24 et nervulorum reticulo parum elevatis, subtus pallidior subfulvida vel glaucescens eglandulosa epilosa papillis ceriferis epidermicis petasiformibus ex toto obtecta costa media rubida conspicua et venis primariis rubidis paullo elevatis reti ultimo purpureo omnino immerso ; petiolus circ. 3 cm. longus purpureus glaberrimus nitens. Flores magni in umbellam ad 7-floram terminalem racemose aggregati rhachi glandulosa ad 2.5 cm. longa vel breviore ; inflorescentiae alabastra ovoidea circ. 1.7 mm. longa 1.2 mm. lata ; bracteae steriles late ovatae crustaceae cucullatae obtusae extus rubro-glandulosae et plus minusve pilosae intus spadiceo-nitidae prope apicem plus minusve puberulae fertiles plus minusve dense sericeae ; bracteolae lineares membranaceae circ. 1 cm. longae pilosae ; pedicelli purpurei circ. 3 cm. longi validi recti luteo-glandulosi superne in calycis cupulam oblique dilatati. Calyx ad 5 mm. longus plus minusve luteo-glandulosus, cupula purpurea brevi vix 1 mm. longa in limbum subcoriaceum inaequaliter et irregulariter lobulatum lobulis rotundatis vel ovatis vel deltoideis plerumque glanduloso-ciliatis expansus. Corolla magna crassa carnosula alba extus pallide roseo-suffusa circ. 8 cm. longa a basi infundibuliformi in limbum 7-lobatum tubato-explanatum ampliata extus ubique luteo-glandulosa intus basim versus pubescens, lobis rotundatis emarginatis subcrenulatis circ. 2 cm. longis 3 cm. latis. Stamina 16 inaequalia majora circ. 5.5 cm. longa minora circ. 4.5 cm., filamentis superne filiformibus prope basim latioribus et pubescentibus, antheris circ. 5 mm. longis. Gynaeceum circ. 7.3 cm. longum corolla brevius ; ovarium nigro-purpureum conoideum circ. 8 mm. longum dense luteo-glandulosum glandulis brevissime stipitatis ; stylus glandulis brevissime stipitatis luteis vel rubris ex toto obtectus sub stigmate discoideo lobulato vix ampliatus vix curvatus. Capsula immatura nigra asymmetrica.

Species *Rh. diaprepiti*, Balf. f. et W. W. Sm. similis sed foliis subtus eglandulosis et nervulorum reti purpureo conspicuo notatis, floribus in partibus omnibus minoribus, corolla extus profuse glandulosa distinguenda.

W. Yunnan. Hills around Tengyueh. Alt. 6000–7000 ft. Lat 25° N. Open situations. Shrub of 4–8 ft. Flowers thick fleshy pure white interior, flushed pale rose exterior. G. Forrest. No. 7930. May 1912.

This species seems to be intermediate in flower to *Rh. dis-*

color, Franch. and *Rh. diaprepes*, Balf. f. et W. W. Sm., having larger flowers than the former and smaller ones than the latter. It differs from both of them in its under-leaf surface, which always shows the purple reticulum of the ultimate venation although this is submerged in the leaf-lamina. In both the other species the epidermal papillae are developed to a degree sufficient to mask the venation, and it is this which gives the very white aspect to the under-leaf, particularly in *Rh. discolor*. *Rh. rasile* is likest to *Rh. diaprepes*, and is readily distinguished by the eglandular under-leaf surface and the very glandular outer surface of the corolla.

3786 **Rhododendron rhabdotum,** Balf. f. et Cooper.

Arbor parva ad 4 m. alta. Ramuli hornotini circ. 2.5 mm. diam. squamis peltatis dense imbricatis membranaceis pallide fulvidis furfuracei et pilis longis stramineis setosi, annotini circ. 3 mm. diam. rubidi fere esquamati setarum vestigiis vestiti. Alabastrorum perulae intimae in folia gradatim transeuntes ad ramos inter se distantes diu persistentes spathulatae subpetiolatae 2.5 cm. longae 8 mm. latae vel majores membranaceo-coriaceae apice obtusae mucronulatae dorso squamis peltatis rufo-furfuraceae; folia juvenilia margine setosa utrinque lepidota supra squamis fere sessilibus latis uniformibus mox detersilibus ex umbone fulvo parvo institaque multo latiore membranacea alba aedificatis induta subtus squamas fulvas biformes gerentia; petiolus lepidotus et setosus. Folia petiolata ad 15.5 cm. longa; lamina coriacea oblonga ad 14 cm. longa 4.7 cm. lata apice obtusa tuberculo-mucronata margine anguste carti-laginea paullo recurva setarum detersilium pedibus subasperata deorsum in basim obtusum attenuata utrinque concolor pallide viridis opaca, supra costa media basim versus elevata apicem versus sulcata venisque primariis utrinsecus circ. 10 paullo sulcatis pinnatim et curvatim adscendentibus notata caeteroquin laevis glabra sed squamarum juvenilium vestigia exhibens, subtus costa media lepidota venisque primariis elevatis, superficie rufo-lepidota et setis paucis conspersa, squamis breviter stipitatis secretione rufa ex toto impletis umbone lato institaque angusta constructis biformibus (magnis paucis conspersis) discontiguis, areis intersquameis epidermicis squamarum diametro multo latioribus et papillis longis baculiformibus ceriferis plurimis dense obtectis; petiolus circ. 1.5 cm. longus vix sulcatus rubidus glabrescens sed squamis setisque vestigiatim notatus. Flores magni per paria ad apicem ramorum orientes; bracteae bracteolaeque ignotae; pedicelli crassi circ. 1.7 cm. longi 2 mm. lati rubri rufo-lepidoti et puberuli. Calyx circ. 1.2 cm. longus fere ad basim 5-lobatus, cupula lepidota et

puberula, lobis foliaceis submembranaceis oblongo-ovalibus apice rotundatis pallide viridibus elepidotis extus intusque et ad marginem praecipue ad apicem pilis albidis hirtis plus minusve praeditis. Corollae lacteae vittis 5 rubris circ. 5 mm. latis medio-petalis lineatae infundibuliformis crassae ad 11 cm. longae tubus extus pubescens elepidotus intus glaber basi angustus 5-gibbosus, 5-lobatus, lobis rotundatis circ. 2.5 cm. longis 4 cm. latis subundulatis nunc emarginatis. Stamina 10 subaequalia circ. 9.5 m. longa corollae tubum paullo superantia, filamentis deorsum explanatis in parte triente infero longe villosis, antheris oblongis circ. 1 cm. longis 3 mm. latis atro-rubentibus. Discus sub ovario pilis erectis dense vestitus. Gynaeceum corollae aequilongum stamina superans; ovarium ovoideo-conoideum in stylum attenuatum circ. 8 mm. longum 4 mm. diam. squamis peltatis dense imbricatim rufo-furfuraceum vix sulcatum; stylus fere ad medium sigillato-lepidotus sub stigmate magno lobulato ampliatus et labium stylare formans.

Species sectionis Maddeni aspectu primo corollae vittis latis rubris medio-petalis recognoscenda.

Bhutan. Punakka. Alt. 8000 ft. On dry rock faces. Tree 12 ft. Flowers long cream with red lines outside. R. E. Cooper. No. 3987. 29th May 1915.

A magnificent plant. Without doubt a microform of the type of *Rh. Dalhousiae*, Hook. f., but it has a much larger corolla and then the broad red bands on the outside of the corolla and in the median of the petals mark the plant at sight. These flower features are not the only differential ones. I find no trace of the surface bristles of the young leaves of *Rh. Dalhousiae* on those of *Rh. rhabdotum*, the upper surface of the mature leaves is smoother in *Rh. rhabdotum*, and the indumental scales are much more numerous. Specimens of what I take to be the true *Rh. Dalhousiae*, gathered in Bhutan by Cooper, are from a lower altitude—none over 6000 ft.—than are those of *Rh. rhabdotum*, which was found at 8000 ft. We have no fruit on Cooper's specimens which were collected in May, and the introduction to cultivation of *Rh. rhabdotum* awaits the effort of some explorer in the future.

Rhododendron rhaibocarpum, Balf. f. et W. W. Sm.

Frutex circ. 1.5 m. altus parvifolius ramis tenuibus strictis. Ramuli hornotini circ. 2 mm. diam. nigro-purpurei dense glanduloso-setosi quasi viscide hirsutissimi substrigillosi, indumento ex elementis biformibus composito primo e setulis plurimis longis et pilis brevibus sebaceis fuscis vel rubris vel aurantiacis glandula rubra clavata vel obovoidea terminatis, secundo e pilis eglandulosis aurantiacis vel rubris nunc longe stipitatis plus

minusve fasciatim ramosis, nunc floccosis brevissime stipitatis radiatim et breviter ramosis, post annum secundum glabri albido-grisei deinde decorticantes. Alabastrorum terminalium ovoideorum ruforum setulosorum perulae extimae elongatae circ. 1.1 cm. longae a basi circ. 2 mm. lata gradatim attenuatae dense glanduloso-setulosae et floccosae, intermediae in triente infero circ. 3.5 mm. latae orbiculares superne strictae caudatae omnino glanduloso-setulosae et floccosae, intimae ovatae circ. 5 mm. longae fulvidae cucullatae obtusae utrinque plus minusve floccosae. Folia petiolata ad 9 cm. longa; lamina coriacea oblonga nunc elliptico-oblonga rarius fere elliptica ad 7 cm. longa 3 cm. lata apice obtusa rubro-mucronulata margine cartilaginea plana basi subtruncata vix cordulata nec attenuata, supra opaca viridis glaberrima nunc floccorum juvenilium laxe conspersorum vestigiis notata costa media paulo sulcata venis primariis utrinsecus ad 12 vix conspicuis superficie in modum squali corii rugulosa, subtus pallidior venularum reti ultimo purpureo submerso costa media elevata erubescente glabra vel ad basim setulosa et floccosa venis primariis purpureis vix prominulis caeteroquin pilis minutis simplicibus solitariis nunc floccosis vel caulifloralibus aurantiacis vel rubris omnino punctulata; petiolus ad 2 cm. longus primo setulosus et floccosus indumento biformi ei ramulorum simili obtectus quasi viscide hirsutissimus tandem plus minusve glabrescens vel glaber et laete rubens. Umbella vera ad 8-flora terminalis; bracteae et bracteolae deciduae ignotae; pedicelli circ. 1.5 cm. longi nigro-purpurei glandulis rubris stipitatis vestiti. Calyx parvus glandulosus 5-lobatus, lobis inaequalibus postero-lateralibus majoribus rotundatis circ. 2 mm. diam. Corolla rosea? infundibuliformis ad 2 cm. longa (in flore marcido) extus glabra intus puberula, lobis 5 semi-lunatis circ. 7 mm. longis 1.2 cm. latis crenulatis. Stamina 10 inaequalia longiora circ. 2 cm. longa breviora 1 cm. longa, filamentis puberulis, antheris atro-purpureis 2 mm. longis. Ovarium angustum sursum tenuius 7 mm. longum 1.5 mm. diam. glandulis rubris stipitatis dense vestitum; stylus staminibus corollaque longior ipse ad 2.5 cm. longus glaber sub stigmate lobulato angustus haud expansus. Capsula angusta falciformis circ. 2.5 cm. longa 4 mm. diam. nigro-purpurea glandularum vestigiis asperata valvis 5 ab apice dehiscens. Semina pallide straminea circ. 1.5 mm. longa 0.5 mm. lata complanata oblonga ad extremitates attenuata ibique vesiculoso-carunculata.

Species elegantissima *Rh. jucundo* affinis indumento glanduloso-strigilloso et floccoso distincta.

E.N.W. Yunnan. Mountains in the N.E. of the Yangtze bend. Alt. 11,000 ft. Lat. 27° 45′ N. Open rocky situations.

Shrub of 6–7 ft. In fruit. G. Forrest. No. 11,312. Sept. 1913.

E.N.W. Yunnan. Mountains of the Chungtien plateau. Alt. 11,000 ft. Lat. 27° 30′ N. Shrub of 6 ft. Flowers rose? Open scrub in side valleys. G. Forrest. No. 12,667. July 1914.

E.N.W. Yunnan. Kari Pass. Mekong-Yangtze divide. Alt. 12,000 ft. Lat. 27° 40′ N. On the margins of pine and rhododendron thickets. Shrub of 4 ft. In fruit. G. Forrest. No. 12,932. Aug. 1914.

This species, of which seedlings have been raised from Forrest's seeds, is one of the Selense series, and promises to be an acquisition to our gardens. It is a low-growing shrub with small neat leaves and bears many-flowered trusses of flowers, the colour of which is probably pink, and it produces narrow sickle-shaped dark purple fruits. Forrest's specimens are all in fruit or passing into fruit, and the flowers available are shrivelled around the ovaries beginning to develop into fruit. Some modification of the description given above may be necessary, therefore, when more satisfactory flowers are forthcoming.

In Forrest's collection are two plants which resemble *Rh. rhaibocarpum*, but which in default of better illustration I hesitate to identify with it. They are ticketed :—

E.N.W. Yunnan. Kari Pass. Mekong-Yangtze divide. Alt. 11,000 ft. Lat. 27° 40′ N. Amongst mixed scrub. Shrub of 4–6 ft. In fruit. G. Forrest. No. 12,950. Aug. 1914.

E.N.W. Yunnan. Shweli-Salween divide. Alt. 12,000 ft. Lat. 28° 10′ N. Open rhododendron forest. Shrub of 8–10 ft. Foliage only. G. Forrest. No. 13,560. Oct. 1914.

Both of them have leaves approaching more nearly the elliptic, and the remarkable biform indumentum of shoot and leaf-petiole seen in *Rh. rhaibocarpum* does not show on them. There are, however, no young spring shoots, and we know this indumentum soon falls off. No. 12,950 wants the yellow cauliflower-glands of the leaf under-surface. No. 13,560 is specially noticeable because of the russet autumn-tint of the older leaves. Coming from the Kari Pass, as does *Rh. rhaibocarpum*, No. 12,950 may be merely a local divergent from the type. No. 13,560 as a Shweli-Salween divide plant is more likely to be distinct. From the specimens of both of them good seeds have been extracted and one may hope for germination.

There is yet another plant represented in Forrest's collection by two sets of specimens (in foliage only) which also belong to the Selense series. The tickets on the specimens run :—

W. Yunnan. Western flank of the Shweli-Salween divide.

Alt. 10,000–11,000 ft. Lat. 25° 20′ N. Open rocky mountain pasture. Shrub of 2–4 ft. G. Forrest. No. 8988. Aug. 1912.

W. Yunnan. Western flank of the Shweli-Salween divide. Alt. 10,000 ft. Lat. 25° 20′ N. On the margins of rhododendron thickets. Shrub of 4–6 ft. G. Forrest. No. 9055. Aug. 1912.

These are of the same species, but I cannot match them with any one as yet described, and their identification must await further exploration.

Rhododendron rhantum, Balf. f. et W. W. Sm.

Frutex ad 8 m. altus. Ramuli hornotini purpurei glandulis rubris paucis mox evanidis conspersi annotini glabri circ. 3 mm. diam. virides deinde sordide grisei tandem desquamantes. Alabastrorum oblongo-conoideorum acutorum circ. 3 mm. diam. perulae extimae fulvae suborbiculares subcarinatae cucullatae vix mucronatae coriaceo-crustaceae circ. 6 mm. latae dorso rubro-glandulosae et vernicosae, intimae spathulatae tenuiores spadiceae circ. 1.8 cm. longae prope apicem fimbriatae 6 mm. latae rubro-glandulosae vernicosae. Folia petiolata ad 12 cm. longa ; lamina crasse coriacea oblonga ad 8 cm. longa ad 3.5 cm. lata apice obtusa vel subrotundata mucrone corneo conspicuo notata margine cartilaginea basi late obtusa vel subrotundata nec cordulata utrinque glabra, supra atro-viridis laevis vix nitens costa media sublutescente sulcata pennivenia venis primariis utrinsecus ad 16 vix sulcatis, subtus pallidior subflavescens vel glaucescens costa media conspicua elevata venis primariis et venarum reti obscuratis (lamina juvenilis supra pilis floccosis deciduis paucis praedita subtus ex toto glabra) ; petiolus circ. 4 cm. longus glaber viridis in juventute purpureus et glandulis globosis rubris paucis conspersus. Umbella terminalis ad 7-flora ; bracteae et bracteolae ignotae ; pedicelli ad 7 cm. longi striati copiose rubro-glandulosi glandulis brevissime stipitatis in calycis cupulam oblique expansi. Calycis cupula atro-purpurea circ. 1.5 mm. longa dense rubro-glandulosa, lobi 7 aequales deltoidei obtusi vix 0.5 mm. longi plus minusve rubro-glandulosi. Corolla pallide rosea postice rubro-maculata infundibulari-campanulata 5 cm. longa extus glabra, tubo intus puberulo, lobis 7 rotundatis vel semi-lunatis ad 2.5 cm. longis et 3 cm. latis emarginatis subcrenulatis. Stamina 14 inaequalia declinata breviora intra tubum corollinum inclusa longiora circ. 3 cm. longa exserta, filamentis deorsum paullo expansis glabris, antheris pallide ochraceis. Ovarium oblongo-conoideum nigro-purpureum circ. 5 mm. longum glandulis rubris globosis breviter stipitatis dense obtectum ; stylus declinatus validus ex toto

rubro-glandulosus staminibus longior corolla brevior ; stigma discoideum lobulatum.

Species ex affinitate *Rh. Sheltonae,* Hemsl. et Wils. sed altior, foliis juvenilibus supra sparsim et floccosim pilosis, adultis ex toto glabris, pedicellis floribusque majoribus, corolla maculata divergens.

E.N.W. Yunnan. Lichiang Range. Alt. 10,000–11,000 ft. Lat. 27° 30′ N. Open situations in pine forests. Shrub 9–25 ft. Flowers pale rose. G. Forrest. No. 10,075. June 1913.

E.N.W. Yunnan. Lichiang Range. Alt. 11,000–12,000 ft. Lat. 27° 30′ N. In pine and mixed forest. Shrub 6–18 ft. Flowers rose-pink. G. Forrest. No. 10,114B. June 1913.

A larger plant than *Rh. Sheltonae,* Hemsl. et Wils. in all its parts. Apart from size it differs in the complete glabrousness of the older leaves. The young leaves have on their upper surface as they open from the bud a few scattered hair tufts which soon disappear leaving no trace ; on the under surface there are no hairs or glands. Consequently, the older leaves have both surfaces entirely bare of appendages. In *Rh. Sheltonae* the under surface always shows red or yellow glands as minute points all over the surface. The lobes at the base of the leaf are not so rounded here as they are in *Rh. Sheltonae.* Then the corolla is always red-spotted in *Rh. rhantum*—hence its name. The species is one of a difficult complex, which will require much examination of living plants before its legitimate microforms can be accurately diagnosed. We have seedlings of *Rh. rhantum* (No. 10,075) raised from Forrest's seed, presented by Mr. J. C. Williams, Caerhays Castle, and we may look to having flowers of the species in a few years.

Rhododendron sciaphilum, Balf. f. et Ward.

Frutex nanus circ. 0.5 m. altus sub tegmine silvarum pluvialium profundo truncis arborum prostratis mortuis nunc solo innascens. Rami internodiis elongatis notati late patentes, hornotini circ. 4 mm. diam. cinnamomei tomentosi indumento crasso bistrato induti, strato supero e pilis fibrillosis longis pauciramosis spiraliter tortuosis et intertextis constructo, strato infero occulto e squamis peltatis angustis parvis conspersis primo albis translucentibus deinde plus minusve secretione rubra impletis aedificato, post annos 2–3 glabrescentes deinde grisei decorticantes. Alabastra foliorum ignota. Folia petiolata ad 16 cm. longa ; lamina crasse coriacea elliptico-oblonga vel anguste obovata ad 14 cm. longa 5.3 cm. lata apice acuminata tuberculo rubro sphaerico terminata margine cartilaginea recurva basi rotundata nunc subcordulata, supra opaca pallide viridis subplana vel paullo grosse rugulosa haud bullata costa media

profunde sulcata sulco pilis longis spiraliter curvatis impleto venis primariis utrinsecus ad 10 vix conspicuis, pilis paucis longis contortis praecipue prope marginem vestita et squamis peltatis rufis conspersa, subtus dense et uniformiter cinnamomeo-tomentosa indumento persistente bistrato ei ramorum simili costam mediam venasque primarias elevatas obtegente ; petiolus circ. 2 cm. longus indumento similiter ut laminae superficies infera omnino inclusus. Flores haud fragrantes 2–3 in umbellam terminalem dispositi ; bracteae interiores ovatae subcrustaceae circ. 1.3 cm. longae 7 mm. latae extus puberulae et centro apiceque pilis longis tortuosis dense tomentosae intus basi glabrae apice adpresso-puberulae ; bracteolae lineari-ligulatae subtruncatae pedicellos subaequantes brunneae pilis paucis indumenti sublaminaris praeditae ; pedicelli ut petioli indumento inclusi ad 1.2 cm. longi sub calyce turbinatim expansi. Calyx membranaceo-foliaceus pallide roseus 1.2 cm. longus ultra medium 5-partitus extus sparsim lepidotus et pilis indumenti conspersus, lobis rotundatis flabelliveniis inaequalibus (maximo circ. 1 cm. lato) margine pilis indumenti spiraliter intertextis ciliatis. Corolla alba obscure 5-vittata tubuloso-campanulata circ. 4.5 cm. longa extus albo-lepidota intus glabra, 5-lobata, lobis rotundatis circ. 2 cm. longis 2.5 cm. latis margine undulatis. Stamina 10 (–11) inaequalia longiora circ. 4 cm. longa antheris oblongis atro-purpureis circ. 7 mm. longis, breviora circ. 2.2 cm. longa antheris circ. 5 mm. longis, filamentis aurantiacis a basi paullo dilatato ad medium albo-pubescentibus. Gynaeceum circ. 4.3 cm. longum corolla paullo brevius stamina superans ; ovarium globosum circ. 5 mm. diam. sulcatum indumento denso bistrato (superstrato aureo-piloso et substrato lepidoto) simuliter ac folia indutum ; stylus basi indumento simili obtectus caetero-quin glaber sub stigmate magno atro-purpureo lobato paullo expansus et labium circulare formans.

Species *Rh. bullato*, Franch. affinis foliis majoribus haud bullatis, corolla haud fragrante distincta.

E. Burma. Htawjaw. Valley of Naung Chaung. Lashi country. 7000–8000 ft. Dwarf shrub of 18 in. to 2 ft. on dead fallen tree-trunks or on the ground ; deep shade of rain forest. Flowers white not scented. Calyx pink. F. Kingdon Ward. No. 1629. 4th June 1914.

A species nearly allied to *Rh. bullatum*, Franch. and to *Rh. Edgeworthii*, Hook. f., but its leaves suffice to distinguish it at a glance from these species. They are larger and want the bullation of the surface which is so marked a feature in the leaves of these allied forms. The bullation is due to the pouching upwards of the lower leaf-surface between the veins which appear on the upper surface to be below the level of the leaf-surface at

the bottom of a groove. In *Rh. sciaphilum* there is sometimes, particularly towards the margin and top of the leaf, a suggestion of this, but generally the surface is smooth and the primary veins have no groove above them. And then *Rh. sciaphilum* is wanting, as Mr. Kingdon Ward tells us, in the character which is so strongly developed in the allied species—fragrance of the flower.

The discovery of *Rh. sciaphilum* in the Naung Chaung Valley in E. Upper Burma establishes an interesting geographical link between the Himalayan and the West Chinese flora. The series to which it belongs we may speak of as the Edgeworthii series, after the well-known Himalayan *Rh. Edgeworthii*, the first described of the species now placed in it.

The description by Franchet in 1887 of Delavay's specimens of *Rh. bullatum* and *Rh. Bureavi* put on record that the type of *Rh. Edgeworthii*, before then known only from Sikkim and Bhutan through the explorations in the middle of last century of Sir Joseph Hooker, of Griffith, and of Booth, had a spread far eastwards in the western region of Yunnan. Then the distribution was carried farther eastwards by the discovery by Maire of *Rh. cruentum* in N.E. Yunnan, and now Ward's plant *Rh. sciaphilum* comes to show us that the type is to be found in the region between the Himalayas on the west and Yunnan on the east, and suggests that there may be other forms of it yet to be discovered over this broad unexplored area. In the following list I give the names of the five known species of the Edgeworthii series, the general distribution of each species, and the name of its discoverer :—

Rh. bullatum, Franch. (1887).	Mid. W. Yunnan : Tali, 8000 ft. (Delavay, 1889.) W.N.W. Yunnan : Tseku. (Soulié, 1903.) E.N.W. Yunnan : Chungtien Plateau, 12,000–13,000 ft. (Forrest, 1904.) W. Yunnan : Tengyueh and Shweli - Salween divide, 8000–10,000 ft. (Forrest, 1912–1913.)
Rh. Bureavi, Franch. (1887).	Mid. W. Yunnan : Langkiung, 10,000 ft. (Delavay, 1886.) E.N.W. Yunnan : Sungkwei and in N.E. of Yangtze bend, 10,000–12,000 ft. (Forrest, 1904.)

Rh. cruentum, Lévl. (1913). — N.E. Yunnan: Ta-hai-tze Plateau, 10,000 ft. (Maire, 1911.)

Rh. Edgeworthii, Hook. f. (1849). — E. Himalaya: Sikkim, 7000–9000 ft. (Hooker f. 1848); Bhutan. (Griffith.)

Rh. sciaphilum, Balf. f. et Ward (1917). — E. Upper Burma: Naung Chaung Valley, 7000–8000 ft. (Ward, 1914.)

To *Rh. Edgeworthii*, which has been in cultivation since 1849, we now can add *Rh. bullatum* and *Rh. Bureavi* as plants in our gardens.

The Edgeworthii series is marked by vegetative and floral characters illustrative of a true natural phylum. The plants seem to be frequently though not always epiphytic. Probably in their case, as in that of others, altitude may determine habitat of the plants and there can be little doubt that their epiphytism is favoured by their partnership with a fungal symbiont.

The striking feature of all the Edgeworthii series is the golden brown or red indumentum which completely encloses with a thick felt every aerial radial organ of their bodies—stem—pedicels—petioles—ovary—base of style—fruit—and covers the under surface of the mature foliage-leaves and more or less that of the calyx. This indumentum in all the forms to a casual observation seems to consist of closely interlocking hairs which can be readily removed. But similarity in general form is arrived at by different paths. Closer examination shows that this superficial "wool" layer is not always made of the same kind of thread, and, moreover, that it does not constitute the whole indumentum, which is bistrate. C. B. Clarke* has noted the bistrate character of the indumentum of the leaves of *Rh. Edgeworthii*. He says: "There are round glandular scales beneath the wool of the leaves."

There are really two modifications of bistrate indumentum in the series. One found in *Rh. bullatum*, *Rh. Edgeworthii*, and *Rh. sciaphilum*, and we may designate it A. form; the other in *Rh. Bureavi* and *Rh. cruentum*, and we may call it B. form:—

A. form.—The upper stratum in this indumentum consists of many very long unbranched hairs, each tapering from a thicker base to a fine point. The base is composed of many elongated narrow cells, each with a thickish wall, lying parallel and forming a cord—fasciated, as it were—often with a core and a peripheral sheath; the number of these component cells

* Clarke in Hook. f. Fl. Brit. Ind. iii. (1882), 469.

in a transverse section diminishes upwards until towards the top there is but one cell. Almost from the base the hair curls upon itself in the same way as a tendril curls when it fails to find a support, and it is the intercurling of the several hairs that gives the peculiar resilient character to the whole superstratum of indumentum. Beneath this upper stratum of hairs lies an under stratum of stalked peltate scales on every part where hair-indumentum is found. They are not confined to the under-leaf surface. These peltate scales, at first white and translucent, become infiltrated later with red secretion, and they look like a series of Peziza-cups spread on the epidermis. And then beneath the peltate scales is to be found a remarkable development of long rod-shaped epidermal papillae, each rod being coated outside by large wax-granules.

B. form.—The hairs of the upper stratum of indumentum are somewhat different. They are fewer, very thick-walled, quite fibre-like. Each has a stout multicellular base, and then extends with a curious jointed character sooner or later branching into long fibre-like threads which do not curl so definitely as those in Form A. yet are conspicuously interwoven. In the under stratum we miss entirely the peltate scales. These are replaced by glands which have multicellular stalks short or long and rounded or oblong heads. And then there are no epidermal papillae.

The contrast is interesting. In both a layer of still air is secured by a thick covering of hairs, in one case unbranched and many, in the other branched and fewer; and then, as a check to the transpiration, are peltate scales and wax-coated epidermal papillae associated with the unbranched hairs, glands and no papillae with the branched hairs; the latter combination perhaps allowing more perfect distribution between fewer hair-stalks of the emanation from the glands.

I am not prepared to maintain that all the plants cited in the table under *Rh. bullatum* are really that species. Their distribution is against identity. It is rare to find a species running from the dry Chungtien Plateau south to the moist region of Tengyueh, and the specimens themselves show difference which lack of material alone makes it difficult to appraise. I do no more here than point out the possibility of more than one species being included under the name, and leave over discussion of the forms until after additional illustrative specimens have been obtained.

Rh. cruentum has not been described adequately, and I therefore give a description of it here, bringing in also one of its ally *Rh. Bureavi*, so that their relationships may be appreciated :—

Rhododendron cruentum, Lévl.* in Fedde Repert. xii (1913), 284.

Small tree with thick short branches fully 5 mm. in diameter, when a year old clad with dense thick rusty wiry bistrate indumentum of long-branched thick-walled fibril-like interlocking hairs with intermixed glands which have multicellar stalks, indumentum persistent as a grey-black coating on older branches. Foliage-leaf buds unknown. Leaves shortly petiolate very thick and leathery, as much as 10 cm. long; lamina oval-lanceolate, as much as 7.5 cm. long 3 cm. broad, narrowed to the triangularly acute tip which has a short red hydathodal mucro, margin recurved, base obtuse or somewhat wedge-shaped; upper surface dark green somewhat glossy with a grooved midrib lined with tomentum especially at base, rest of surface smooth glabrous, primary veins about 8 on each side of midrib hardly visible; under surface bright rusty-red covered all over with a thick bistrate persistent indumentum like that of the young stems concealing the leaf epidermis completely—the stalked glands intermixed are fewer apparently than in *Rh. Bureavi*; petiole stout, as much as 2.5 cm. long and 4 mm. in diameter, somewhat swollen and expanded at base, coated with a thick indumentum like that of the leaf under-side. Inflorescence of some 10 flowers in a true umbel, the rhachis shortly woolly and apparently eglandular; outer sterile bracts caudate, the tail ensheathed in a dense cloak of rufous indumentum arises from top of and is a little longer than a broad ovate or rounded base about 5 cm. long 7 mm. broad, this base is glabrous inside rufously hairy and eglandular outside, inner fertile bracts more or less persistent during flowering oblong spathulate submembranaceous subtruncate and apiculate about 1.8 cm. long and 7 mm. broad densely clad with adpressed branched rufous hairs, there are no glands; bracteoles about 5 mm. long filiform clavate at top apparently not glandular, at the tip coated with adpressed whitish hairs; pedicels medium-stout stiff about 1.4 cm. long completely enclosed in a sheath of rusty-red indumentum with which are intermixed many red clavate stalked glands. Calyx about 4 mm. long fulvous cut to near the base into 5 subequal lobes; cup densely lanate with grey hairs mixed with orange-coloured clavate stalked glands; lobes coriaceous not translucent, about 2.5–3.5 mm. broad, outside clad throughout like the cup, margin

* Léveillé's description runs :—

Rh. cruentum, Lévl.—Folia griseo-viridia nitida valde crassa subtus tomento cruento induta; pedunculi, bracteae, petioli aeque tomentoso-cruenta; flores albi roseo-tincti.

Yun-Nan: Brousse du plateau de Ta-Hai-Tse, 3200 m., mai 1912. E. E. Maire.

glandular-ciliate. Corolla tubular-campanulate white or white flushed rose, not spotted, about 2.5 cm. long, outside glabrous; tube inside densely pubescent eglandular; lobes rounded crenate emarginate, about 1.5 cm. long by 2 cm. broad, often much less, more or less erect. Stamens 10 unequal, longest as much as 2.2–3 cm. long, shortest about 1.5 cm. long; anthers 2.5–3.5 mm. long; filaments somewhat abruptly flattened and broadened at base and there densely whitely pubescent to a little above ovary or higher, above that glabrous. Gynaeceum about equalling longest stamens; ovary 5 mm. long, in smaller flowers 3.5 mm. long, conoid grooved densely glandular, glands clavate and stalked mixed with branched more or less rufous hairs; style glandular through more than half its length, glands orange-coloured and stalked, mixed with some branched twisted hairs, apex of style clavate not much expanded into the lobulate stigma which is no wider than the style.

Specimens I have seen are :—

N.E. Yunnan. Scrub of the plateau of Ta-hai-tse [N. of Tungchwan]. 3200 m. Leaves persistent grey-green. Flowers white flushed rose. E. E. Maire. mai 1911. Herb. Léveillé.

N.E. Yunnan. Mountains of Laitowpo [S. of Tungchwan]. 3000 m. Small tree evergreen. Flowers white. Maire. In Herb. Edin. No. 219.

So far as Léveillé's description goes, there is nothing by which to distinguish his species *Rh. cruentum* from *Rh. Bureavi* and other members of the Edgeworthii series. M. Léveillé has, however, been so kind as to present a portion of his type *Rh. cruentum* to the Herbarium of the Royal Botanic Garden, Edinburgh, from which I have learned what was before him when he diagnosed his species. The plant is the same as one of which we obtained specimens from Abbé Maire in 1913, and from this material and M. Léveillé's gift I have drawn up the description given above.

Rh. cruentum is a very near ally of *Rh. Bureavi*, Franch., but shows divergences which forbid its inclusion in that species.

The foliage and shoots are quite alike in the two species, and are most characteristic in their red thick indumental covering—only in *Rh. cruentum* the leaves do not appear to reach the size of those of *Rh. Bureavi*, and the petioles are thinner and longer. The most easily seen distinction between the species is the calyx. In *Rh. Bureavi* the calyx has large membranous lobes with flabellate veins, and the tomentum is mainly formed at their base. In *Rh. cruentum* the calyx-lobes are much smaller, thick and leathery, and their outside surface is covered all over with the indumentum. Another apparently good diagnostic character is the style, which in *Rh. Bureavi* has at the base

dense hair tufts with some long-stalked glands; in *Rh. cruentum* the style is glandular and floccose throughout nearly its whole length. Then I find that in *Rh. cruentum* the corolla-tube is densely pubescent inside; in *Rh. Bureavi* there are fewer hairs but intermixed with them are many clavate glands. On the posterior side are many crimson spots which do not appear in *Rh. cruentum*.

The flowers as a whole of the two species differ in size—those of *Rh. cruentum* being much the smaller. At same time I find some variation in flower-size of this species, but the flowers never seem to attain the size of those in *Rh. Bureavi*.

The finding of *Rh. cruentum* in N.E. Yunnan gives an interesting extension of distribution to the *Bureavi* type. We have *Rh. Bureavi* from E.N.W. and *Rh. cruentum* from N.E. of Yunnan. The localities, separated though they are by the breadth of Yunnan, are within the Yangtze basin, and when we get to know more of the intervening area one or other of them or related forms may be found. Hemsley and Wilson * give a record for *Rh. Bureavi* in Szechwan under Wilson's number 3954. The number is not given in Wilson's list of the plants of the Veitchian expedition, and I have not seen the specimen. I should not expect *Rh. Bureavi* to occur in the area of Szechwan which Wilson explored; the occurrence of *Rh. cruentum* would conform with experience of other species.

Rhododendron Bureavi, Franch. in Bull. Soc. Bot. Fr. xxxiv (1887), 281.†

Small tree or shrub about 2–3 m. high. Branchlets thick short about 5 mm. in diam. when a year old and then clad with a dense thick rusty indumentum of long-branched hairs with intermixed stalked glands, indumentum persistent as a greyish covering for some years. Foliage buds unknown. Leaves stoutly petiolate, very thick and leathery, as much as 12 cm.

* Kew Bulletin (1910), 106.

† Franchet's description runs :—

Rhododendron Bureavi, Franch. — Arbuscula vel frutex 2–3 m. alta, tortuosa ramis hornotinis tomento rubiginoso densissimo obductis; folia ovato-lanceolata, 3–4 poll. longa, basi obtusa, apice breviter acuta, supra atro-viridia lucida, infra simul ac petiolus crassus ultra semipollicaris panno intense rubiginoso vestita, nervis secundariis haud conspicuis; gemmae floriferae fere pollice diam., squamis late orbiculatis margine ciliatis, extus rufo-tomentellis, intus sericeis; flores 7–10 arcte glomerati, breviter pedunculati, rosei vel rubescentes, purpureo-punctati; calyx membranaceus, 7–8 mill. longus, extus lanuginosus, lobis ovatis, obtusis, margine dense et breviter fimbriatis; corolla aperte campanulata, 4 cent. longa, extus glabra, intus ad tubum pubescens, 5-loba, lobis ovato-rotundatis; stamina 10, inclusa, filamenta basi simul ac ovarium et styli pars inferior lanuginosa.

Yunnan, ad collum Yen-tze-hay, prope Lankong. Alt. 3200 m. Delavay. No. 2213.

Très belle espèce, du groupe du *Rh. Edgeworthii*, bien caractérisée par l'épais tomentum d'un fauve rougeâtre qui recouvre la face inférieure des feuilles et les jeunes rameaux.

long; lamina ovate lanceolate, as much as 10.5 cm. long by 5 cm. broad, narrowed to the tip where is a red hydathodal conspicuous mucro, margin recurved, base obtuse or somewhat rounded; upper surface dark green somewhat glossy midrib grooved and lined with branched hairs, primary veins about 12 on each side of midrib slightly grooved, surface otherwise smooth and glabrous; under surface bright rusty-red altogether covered by thick wiry bistrate indumentum of long-branched thick-walled fibril-like curled interlocking hairs, shorter stalked glands are mixed with the hairs, venation completely hidden; petiole short and thick 1–1.5 cm. long by 5 mm. in diam., clad with indumentum like leaf under-surface. Inflorescence a shortly racemose umbel of 7–10 flowers, rhachis some 4 mm. long, red-glandular rufously hairy; outermost sterile bracts rounded base amplexicaul about 9 mm. long and broad nearly glabrous inside, outside enveloped in thick rufous indumentum, caudate, tail nearly twice the length of the base and like it enveloped in rufous indumentum, eglandular, inner fertile bracts oblong spathulate as much as 2.5 cm. long 1 cm. wide at top, longer than pedicels somewhat truncate and apiculate, on both sides clad with rufous or whitish adpressed branched interlocking hairs, no glands; bracteoles clavately filiform rufous tapered to a point, densely clad with adpressed hairs with some stalked glands at the tip, much shorter than pedicels about 1 cm. long; pedicels stout about 1.7 cm. long 2 mm. diam. completely enclosed in a hair-indumentum like the leaf under-side, intermixed with crimson long-stalked clavate glands. Calyx about 1 cm. long cut to near base or only to beyond the middle into 5 slightly unequal translucent lobes; tube cupular outside rufously lanate and densely glandular, the red glands stalked clavate; lobes oblong obtuse membranous, as much as 5 mm. broad, with flabellate venation, outside rufously lanate and red glandular particularly at the base, margin fringed with stalked clavate red glands. Corolla about 4 cm. long or a little more fleshy tubular-campanulate rose or reddish abundantly spotted crimson on posterior side; tube outside glabrous save for an occasional red gland, inside pubescent and glandular; lobes 5 subpatent rounded about 1.5 cm. long by 2.5 cm. broad crenulate emarginate. Stamens 10 unequal, longest about 2.5 cm. long, shortest about 1.5 cm. long; anthers about 2.5 mm. long; filaments much flattened and widened towards base, densely pubescent to above the ovary and even to just below the anther. Disk glabrous. Gynaeceum about 3 cm. long; ovary about 4.5 mm. long thick somewhat ovoid grooved densely clad with rufous long-branched fibril-like hairs and many long-stalked red glands all more or less adpressed; style at very base with

a few glands and densely lanate, glabrous elsewhere, only slightly expanding into a slightly discoid lobulate stigma.

Specimens which I have seen of the species are :—

Yunnan. In collibus ad collum Yan-tze-hay supra Lankong. Alt. 3200 m. Delavay. No. 2213. 1st June 1886. This is the type-number of Franchet's description.

Yunnan. Col de Yan-tze-hay (Lankong) à 3200 m. d'altit. Arbrisseau ou arbre de 5 à 6 mètres lisière des bois. Fls. roses ou à peu près blanches. Delavay. 25 mai 1887.

Yunnan. Lisière des bois au col de Yan-tze-hay au dessus de Mo-so-yn entre 3200 et 3500 m. d'altit. Arbrisseau ou petit arbre. Fls. roses. Delavay le 7 juin 1888, id. le 8 août 1888.

Yunnan. Sungkwei-Langkiung divide, eastern slope. Alt. 11,000–12,000 ft. Lat. 26° N. Forrest. No. 506. Dec. 1904.

Yunnan. Mountains in the N.E. of the Yangtze bend. On open pasture. Alt. 11,000 ft. Lat. 27° 45′ N. Shrub of 8–10 ft. In fruit. Forrest. No. 10,834. Aug. 1913.

Yunnan. Sungkwei Pass. In and on the margins of pine forests. Alt. 10,000–12,000 ft. Lat. 26° N. Shrub of 6–10 ft. Flowers white with crimson markings flushed rose exterior, fragrant. Forrest. 15th May 1917.

Rhododendron sinolepidotum, Balf. f.

Rh. lepidotum, Hook. f., var. *eleagnoides*, Franch. (non Hook. f.), in Bull. Soc. Bot. France, xxxiii (1886), 234.

Suffrutex aromaticus humilis ad 4.5 dm. altus pulvinatim ramosissimus. Ramuli tenues, hornotini circ. 1 mm. diam. flavido-virides squamis laxis peltatis stipitatis ex umbone lato institaque latiore margine irregulari cincta constructis obtecti, annotini rufi squamarum vestigiis notati, deinde grisei decorticantes. Alabastrorum oblongorum parvorum perulae paucae saepe 2 fuscae lepidotae folia convoluta tegentes. Folia breviter petiolata ad 2.2 cm. longa autumno promoto laete erubescentia ; lamina coriacea ad 2 cm. longa 1 cm. lata oblonga vel elliptico-oblonga apice obtusa vel acutiuscula mucronulata margine leviter revoluta nunc subasperata basi obtusa, supra viridis opaca squamis contiguis peltatis siccis superficialibus sordide albidis (nunc umbone annulatim subnitente) furfuracea, subtus squamis contiguis vel vix contiguis subimpressis partim brunneo-coloratis partim subviridibus nunc punctulatis obtecta, costa media supra sulcata infra elevata venarum reti caeteroquin occulto ; petiolus brevis circ. 2 mm. longus lepidotus. Flores 1–3 perspicue pedunculati ad apices ramorum dispositi ; bracteae crustaceo-coriaceae helvenaceae cucullatae carinatae extus rubiginoso-lepidotae intus puberulae, extimae rotundatae circ. 5 mm.

longae 4 mm. latae mucronatae margine longe ciliatae, intimae oblongo-spathulatae dimidio longiores subfoliaceae intus lepidotae; pedicelli tenues lepidoti circ. 1.5 cm. longi sub fructu paullo aucti. Calyx circ. 3 mm. longus ad medium vel ultra 5-fissus cupula dense lepidota, lobis ovatis vel rotundatis subaequalibus patentibus saepe nudis viridibus vel rubidis. Corollae intense roseae extus albido-lepidotae circ. 1.2 cm. longae tubus ad 6 mm. latus poculiformis circ. 3 mm. longus venulis petalinis 15 percursus, limbus explanatus, lobi 5 inaequales (posticus maximus roseo-maculatus) rotundati vel hemisphaerici basi auriculati et imbricati circ. 6 mm. longi ad 9 mm. lati obscure crenulati uninervii. Stamina 10 alterna paullo longiora exserta, filamentis circ. 8.5 mm. longis a basi ima glabra intra tubum corollinum villosis, antheris stramineis circ. 2 mm. longis. Ovarium sulcatum circ. 2 mm. longum albido-lepidotum; stylus deflexus circ. 2.25 mm. longus clavatus; stigma lobulatum. Capsula oblonga circ. 4 mm. longa 3 mm. diam. rufa squamarum vestigiis notata valvis 5 tandem deciduis ab apice dehiscens.

Species *Rh. lepidoto*, Wall. valde affinis habitu humiliore, foliorum indumento, calyce, loborum corollinorum venarum reticulo distincta.

E.N.W. Yunnan. Likiang. Delavay. No. 18. 10th July 1884.

E.N.W. Yunnan. Eastern flank of the Likiang Range. Crevices of conglomerate cliffs in pine forest. Alt. 11,000 ft. Lat. 27° 25′ N. Dwarf shrub of 6–10 inches. Flowers rich crimson, rose markings a shade darker. G. Forrest. No. 2505. June 1906.

E.N.W. Yunnan. Eastern flank of the Likiang Range. Dry gravelly banks in pine forests. Alt. 9000–10,000 ft. Lat. 27° 12′ N. Dwarf shrub of 6–12 inches. Flowers bright rose. G. Forrest. No. 2770. July 1906.

E.N.W. Yunnan. Ascent of the Sung Kwei Pass from the Lang Kong Valley. In dry pine forests. Alt. 8000–9000 ft. Lat. 26° 12′ N. Shrub of 6–18 inches. Flowers rose with crimson markings. G. Forrest. No. 5839. May 1910.

E.N.W. Yunnan. Eastern flank of the Likiang Range. Dry open situations amongst scrub. Alt. 9000–10,000 ft. Lat. 27° 25′ N. Dwarf shrub of 6–18 inches. Flowers bright rose-crimson. G. Forrest. No. 5864. June 1910.

E.N.W. Yunnan. Likiang Range. Alt. 10,000–12,000 ft. Lat. 27° 40′ N. G. Forrest. No. 10,238. June 1913.

This plant has been confused with *Rh. lepidotum*, Wall. but it is not that species.* *Rh. sinolepidotum* is a smaller plant

* The plants under Nos. 2550 and 2770 of Plantae Forrestianae (Notes R.B.G. Edin. vii. (1912)) named *Rh. lepidotum*, Wall. are this *Rh. sinolepidotum*, Balf. f.

with thinner twigs and leaves which colour beautifully red in autumn. The scales on the leaf upper surface are contiguous and soon dry up, appearing as a dirty white or grey scurf on the older leaves. Occasionally the umbo of the scale has a resinous content, but the scales never stand apart as glistening spots on a shining green surface as they do in *Rh. lepidotum.* The scales on the under-leaf surface, too, are closer set and usually more or less punctulate. The leaf-shape is always on the side of elliptic, whilst in *Rh. lepidotum* it is on that of lanceolate. The pedicels are shorter, the calyx is smaller and its lobes not so separate as they are in *Rh. lepidotum.* The broad rounded corolla lobes have one mid-vein, whilst in *Rh. lepidotum* the mid vein is accompanied by two lateral ones running up nearly to the top. The fruit is smaller.

The species was introduced by Mr. Bulley by seeds collected by Forrest in 1906. From seeds presented to the Royal Botanic Garden, Edinburgh, by Mr. Bulley, plants have been raised which first flowered in 1910.

Kingdon Ward collected in July 1912, under No. 905, on the cliffs and rocks of Ka-gwr-pw, at an altitude of 13,000–14,000 ft., a crimson-flowered dwarf rhododendron which resembles closely *Rh. sinolepidotum,* but the petaline lobes are hardly in character for they are elongated ovate. There are other minor differences, possibly local divergences, from the specific type and giving no sufficient characters for separation. I mention the variation in view of a complete analysis of the Lepidotum series at some future time.

Rhododendron stenaulum, Balf. f. et W. W. Sm.

Frutex glaber ad 9 m. altus ramis virgatis folia quasi verticillata gerentibus verticillis fictis inter se distantibus incrementorum annuorum apicem notantibus. Ramuli annotini circ. 2 mm. diam. pallide grisei glaberrimi. Alabastra foliorum ignota. Folia petiolata ad 17.5 cm. longa ; lamina chartacea oblonga vel oblongo-lanceolata nunc lanceolata vel subobovalis ad 16 cm. longa 5 cm. lata apice recte vel oblique acuminata margine plana tenuiter cartilaginea pilorum detersilium pedibus nigricantibus obscure scabriuscula nunc ad basim praecipue pilis paucis subsetulosis praedita basi longe cuneato-attenuata, utrinque glaberrima nitens laevis, supra laete viridis costa media venisque primariis subpatulis intra marginem curvatis utrinsecus circ. 12 sulcatis, subtus pallidior costa media elevata viridi vel suberubescente pedibus pilorum juvenilium obscure et conspersim notata venis primariis subimmersis venularum reticulo ultimo occulto ; petiolus ad 1.5 cm. longus saepe erubescens supra anguste sulcatus lateraliter subscabriusculus vel setulis

paucis conspersus. Flores fragrantes in racemo-umbellas axillares 3–5 ad apicem ramulorum fasciculatim dispositi; umbellae 3–5-florae rhachi brevi circ. 7 mm. longa glabra; bracteae internae circ. 2.5 cm. longae 5 mm. latae anguste spathulatae vel claviformes membranaceae brunneae obtusae mucronulatae extus puberulae; bracteolae filiformes membranaceae circ. 1.7 cm. longae puberulae ad apicem leviter cristatae; pedicelli graciles stricti divaricati ad 3.5 cm. longi glabri. Calyx minutus glaber profunde 5-lobatus, lobis circ. 1 mm. longis deltoideis sub-erosis eciliatis paullo erubescentibus nunc lobo singulo (vel 2) lineari-ligulato membranaceo ad 1.7 cm. elongato 0.5 mm. lato breviter albido-ciliato truncato vel longe acuminato vel aristato. Corolla extus roseo-alba vel alba intus varo luteo basali postice notata ad 6.7 cm. longa infundibularis tubo angusto circ. 1.7 cm. longo limbi ampliati disco circ. 1 cm. longo extus glabra intus minutissime puberula haud gibbosa, lobis elliptico-oblongis vel ovalibus obtusis circ. 4 cm. longis 2.5 cm. latis tubo multo longioribus basi angustatis vix auriculatis anterolateralibus paullo minoribus. Stamina 10 subaequalia corolla styloque breviora, longiora circ. 5 cm. longa breviora circ. 4.5 cm., antheris circ. 2.5 mm. longis lacteo-albis, filamentis tenuibus paullo complanatis deorsum vix expansis albis a ima basi ad apicem ovarii glabris supra ovarium fere ad medium puberulis. Discus viridis glaber. Gynaeceum circ. 5.7 cm. longum corolla brevius; ovarium cylindricum in stylum attenuatum angustum circ. 7 mm. longum paullo sulcatum laete viride pilis brevissimis albidis conspersum; stylus glaber basi flavido-viridis sursum albidus sub stigmate flavido-viridi subdiscoideo lobato leviter expansus et labium circulare formans.

Species *Rh. stamineo*, Franch. affinis staminibus inclusis recognoscenda; a *Rh. oxyphyllo*, Franch. foliis chartaceis margine scabridis venis subpatulis notatis, floribus majoribus, filamentis styloque eglandulosis recedit.

W. Yunnan. Divide between the Pú-piao and Yung Chang Valleys. Open situations amongst scrub. Alt. 7000–8000 ft. Lat. 25° 6′ N. Shrub of 6–30 ft. Flowers interior white with a blotch of yellow at base, exterior rosy white, fragrant. G. Forrest. No. 5530. April 1910.

This is a distinct species of the Stamineum series, easily recognised from *Rh. stamineum*, Franch. by its very much larger flowers and included stamens and style. It exhibits more strikingly than most species of rhododendron the juvenile phase of its life-history. The young plantlets are deep claret red all over and have stems, petioles, midrib, and margin of the leaves densely covered with white bristles, some of which end in capitate glands. So unlike is the plant in this state to the

adult that an observer might well question at first their being the same plant. None of Forrest's specimens provide foliage-leaf buds, and I am unable to say what the features of the evolution of the leayes in the adult are, but the traces of juvenile hairs on the several parts of the adult leaf and the occasional presence of setulae indicate that the leaf in its younger stages is setulose. Although the leaves of the adult are green, there is often a tinge of reddening in the petiole and midrib, and at times the lamina may show a sort of metallic purpling reminiscent of the juvenile phase. All the leaves, even the most green, yield on boiling a dark purple red almost black solution.

The calyx is noteworthy. As a rule it is minute with 5 deltoid lobes hardly one millimeter long, but occasionally one of them grows out into a long narrow membranaceous riband over one centimeter in length and sometimes a second one may also do so. Occasional intermediate stages may be seen. A calyx with all five calyx lobes having this riband or thread form is characteristic of *Rh. nematocalyx*, Balf. f. et W. W. Sm. (hence its name), which belongs to the Stamineum series also and is not far removed from *Rh. oxyphyllum*, Franch.

The species is in cultivation and flowered in 1917 with Mr. Magor in Cornwall, who kindly sent to me the flower. Mr. J. C. Williams of Caerhays Castle also sent to me living specimens of the plant.

Rhododendron stereophyllum, Balf. f. et W. W. Sm.

Frutex ad 2 m. altus ramis rigidis strictis subdivaricatis internodiis elongatis. Ramuli annotini circ. 2 mm. diam. purpurei laxe lepidoti et breviter puberuli seniores erubescentes squamarum pilorumque vestigiis notati tandem grisei decorticantes. Folia petiolata ad 6.8 cm. longa ad apicem ramulorum haud aggregata; lamina crasse coriacea elliptica vel oblongo-elliptica vel subovata ad 6 cm. longa 2.8 cm. lata saepe multo minor apice late obtusa mucrone brevi margine plana cartilaginea eciliata basi obtusa vel cuneata, supra viridis subnitida squamis superficialibus discontiguis brunneo-lepidota vel earum vestigiis notata costa media paullo sulcata sulco (sursum inconspicuo erubescente) pilis plurimis brevibus impleto venis primariis utrinsecus circ. 8 vix conspicuis, subtus pallide olivacea squamis aurantiacis vel rubris nitentibus persistentibus discontiguis numerosissimis in foveolas immersis dense obtecta squamarum umbone convexo resinoso-colorato institaque angusta, costa media elevata erubescente laxe rubro-lepidota et pilis brevissimis erectis vestita; petiolus circ. 8 mm. longus ruber plus minusve rubro-lepidotus et puberulus sulcatus sulco pilis albis brevissimis impleto. Umbellae 3–4-florae 3–4 ad

apicem ramulorum fasciculatim dispositae, una terminalis, 2–3 axillares; alabastra floralia ovoidea circ. 8 mm. longa 5 mm. lata atro-brunnea; bracteae sub anthesi persistentes exteriores rotundatae circ. 4 mm. longae et latae cucullatae dorso dense lepidotae subcarinatae mucronulatae intus sericeae margine albo-ciliatae interiores membranaceae spadiceo-brunneae oblongae vel obovatae subspathulatae truncatae circ. 1.2 cm. longae extus basi velutino-puberulae supra aurantiaco-lepidotae intus glabrae margine verticeque albo-ciliatae; bracteolae longae pedicellis longiores a basi ad apicem acutam attenuatae ramentaceae pilosae; pedicelli circ. 8 mm. longi lepidoti et brevissime puberuli apice obliqui bracteis fertilibus breviores. Calyx minutus vix 1 mm. longus extus lepidotus cupularis in lobos 5 inaequales undulatos divisus. Corolla rosea postice rubro-maculata infundibuliformis circ. 2.3 cm. longa extus sparsim lepidota intus puberula, lobis circ. 1.25 cm. longis 9 mm. latis integris. Stamina 10 inaequalia longiora circ. 2.5 cm. longa breviora 1.3 cm., filamentis infra planis ima basi nuda sursum ad trientem puberulis, antheris violaceis 1.5 mm. longis. Gynaeceum circ. 2.8 cm. longum corollam et stamina superans; ovarium parvum vix 2 mm. longum apicem versus paullo attenuatum dense lepidotum; stylus tenuis sub stigmate aequilato haud ampliatus. Capsula cinereo-brunnea oblonga sursum paullo attenuata recta circ. 1.2 cm. longa 4 mm. diam. ab apice valvis 5 dehiscens. Semina rubra vel spadiceo-brunnea circ. 1.5 mm. longa 0.75 mm. lata oblonga subcomplanata exalata vix carunculata.

Species *Rh. siderophyllo*, Franch. affinis sed ramulis petiolisque puberulis, corolla intus perspicue puberula, stigmate parvulo diversa.

Yunnan. Mountains in the N.E. of the Yangtze bend. Alt. 10,000 ft. Lat. 27° 45′ N. Open situations amongst scrub. Shrub of 6–7 ft. Flowers rose. G. Forrest. No. 11,299. Sept. 1913.

This hard-leaved species does not appear to have many features to commend it as a garden plant. The rose-coloured flowers are small and few in a truss, and the base of the trusses is enveloped in the bracts. The red colour of the twigs may be perhaps its most effective character.

Rhododendron Surasianum, Balf. f. et Craib.

Frutex patens circ. 4 m. altus ramis virgatis. Rami annotini circ. 2.5 mm. diam. imbricatim furfuracei squamis peltatis pallide brunneis deinde griseis induti. Alabastra foliorum ignota. Folia petiolata ad 10.5 cm. longa; lamina coriacea oblonga vel oblongo-elliptica vel oblongo-lanceolata nunc

lanceolata ad 9.5 cm. longa 4 cm. lata apice subacuminata mucrone tuberculato terminata margine cartilaginea paullo recurva obscure undulata basi obtusa saepe inaequilateralis, supra olivacea opaca laevis costa media sulcata squamis marcidis lepidota venis primariis utrinsecus circ. 7 paullo conspicuis glabra sed squamarum juvenilium peltatarum vestigiis notata, subtus fulvida costa media venisque primariis prominulis ubique dense (costa media leviter) lepidota, squamis biformibus, paucis majoribus ad 0.5 mm. diam. conspersis caeteris minoribus fere contiguis (areis inter squamas angustis pallide viridibus) secretione rubra vel aurantiaca impletis instita lata integra (in squamis majoribus saepe lobata) cum umbone aequilata; petiolus circ. 1 cm. longus imbricatim furfuraceo-lepidotus supra sulcatus. Flores in umbellas terminales 2–3-floras dispositi; bracteae exteriores crustaceae rotundatae vel ovatae flabelliveniae obtusae vel acutae ad 2.5 cm. longae dorso puberulae et lepidotae pilis brevibus albis ciliatae intus centro sericeae, interiores spathulatae ad 3.5 cm. longae carinatae mucronatae similiter ac exteriores vestitae; bracteolae rubrae lineares longissimae circ. 3.5 cm. longae ex toto pilosae elepidotae; pedicelli crassi circ. 1.2 cm. longi imbricatim furfuraceo-lepidoti. Calyx patelliformis brevis circ. 1 mm. longus margine undulata lobos 5 semi-lunatos vix formante extus dense lepidotus setis albidis ciliatus. Corolla pallide rosea infundibuliformis circ. 7.5 cm. longa, tubo extus puberulo et ubique lepidoto intus puberulo sursum in lobos 5 expanso, lobis latis obovatis circ. 3.8 cm. longis 3.3 cm. latis crenulatis apice rotundatis vel subobtusis vena media conspicua. Stamina 10 inaequalia longiora circ. 5.7 cm. longa antheris oblongis 7 mm. longis, breviora circ. 4 cm. longa antheris circ. 5 mm. longis, filamentis deorsum dilatatis a basi ad trientem puberulis. Discus sub ovario puberulus. Gynaeceum circ. 8 cm. longum corollam paullo superans; ovarium conoideum sulcatum circ. 6 mm. longum a stylo haud constrictum dense imbricatim lepidotum squamis ramentaceis; stylus longus a basi ad medium lepidotus sub stigmate discoideo magno latiore haud expansus.

Species distincta a *Rh. Ludwigiano*, Hoss. specie altera siamensi ejusdem affinitatis longe recedens; illa ramos glabros, folia floresque pedicellosque multo minores possedit; *Rh. ciliicalyci*, Franch. et speciebus aliis sinensibus etiam affinis sed indumento densiore distincta.

Siam. Chiengmai, Doi Sutep. 1500 m. Spreading shrub about 4 m. high; flowers pale pink. On rocky ground in open evergreen jungle. Dr. A. F. G. Kerr. No. 3238. 7th June 1914.

The proper place of *Rh. Surasianum* amongst rhododendrons is beyond question. It is one of the set of species belong-

ing to the series of Maddeni, which have small long-ciliate calyx and ten stamens, by which characters they are separated from the set of *Rh. Maddeni*, Hook. f. itself, in which the calyx is medium or small eciliate and the stamens eighteen to twenty or more, and also from that of *Rh. Dalhousiae*, Hook. f., which possesses a large more or less membranous calyx and ten stamens.

Rhododendron sycnanthum, Balf. f. et W. W. Sm.

Frutex ad 3 m. altus multo breviterque ramosus. Ramuli epilosi tenues, hornotini circ. 1 mm. diam. nigricantes sparsim albido-lepidoti, annotini vix crassiores brunnei nitentes, seniores albido-grisei mox decorticantes. Alabastrorum oblongorum pallide brunneorum acutorum perulae exteriores coriaceae semilunatae circ. 2.5 mm. longae 3.5 mm. latae intus glabrae extus lepidotae margine minutissime ciliatae intimae membranaceae obovato-spathulatae circ. 1 cm. longae apicem versus 3 mm. latae subflavidae intus glabrae extus apicem versus lepidotae margine sparsim ciliatae; folia juvenilia convoluta supra glaberrima subtus dense albo-lepidota margine sparsissime ciliata petiolo albo-lepidoto et ciliis paucis praedito. Folia petiolata ad 4.7 cm. longa; lamina coriacea haud rigida oblonga vel oblongo-elliptica ad 4 cm. longa 1.8 cm. lata sursum et deorsum attenuata apice acuta vel obtusa corneo-mucronulata vel corneo-tuberculata margine cartilaginea paullo recurvata basi obtusa vel late cuneata supra luride viridis ex toto glaberrima (epilosa elepidota) superficie reticulata venulosa (in sicco), costa media erubescente paullo sulcata venis primariis utrinsecus ad 8 venularum reti paullo elevato, subtus pallidior glauco-viridis squamis paucis ex umbone lato convexo secretione rubra impleto institaque angusta brunneo-colorata aedificatis in foveolis haud profundis conspersis, intervallis latis inter squamas venularum reti nunc viridi nunc brunneo-colorato et papillis petasiformibus scintillantibus notatis, costa media carnea elevata squamis sparsissime praedita; petiolus circ. 7 mm. longus erubescens sparsim lepidotus supra sulcatus sulco omnino glabro. Flores 3–4 in umbellas veras terminales solitarias nec fasciculatas dispositi; bracteae deciduae ignotae; bracteolae membranaceae anguste spathulatae circ. 1.2 cm. longae ad apicem 2.5 mm. latae aureo-brunneae intus glabrae extus inferne puberulae superne dense aureo-lepidotae margine longe albido-ciliatae sine crista apicali; pedicelli circ. 1.3 cm. longi purpurei subceraceo-glauci sparsim lepidoti sub flore haud obliqui. Calyx minutus cupularis lepidotus margine in lobos 5 rubros eciliatos circ. 2 mm. latos undulatus. Corollae lavandulaceo-roseae postice varo et maculis rubris notatae tubus infundibuliformis in limbum 5-lobatum obliquum explanatus extus lepidotus intus

postice profuse pubescens, lobis extus lepidotis rotundatis vel oblongo-rotundatis undulatis antero-lateralibus majoribus circ. 1.7 cm. longis 1.3 cm. latis tubo longioribus posterioribus minoribus vix tubum superantibus. Stamina 10 inaequalia longiora circ. 2.7 cm. longa breviora 1.5 cm., filamentis deorsum latioribus a basi ima nuda ad medium puberulis, antheris violaceis circ. 2 mm. longis. Gynaeceum circ. 2.7 cm. longum corollam et stamina subaequans; ovarium circ. 4 mm. longum 2 mm. latum columnare atro-purpureum squamis pallidis dense vestitum; stylus ruber glaber ad apicem vix expansus; stigma discoideum atro-purpureum lobulatum.

Species parvifolia multiflora vero umbellata foliis supra elepidotis epilosis, umbellis haud fasciculatis, floribus plus minusve obliquis, calyce fere obsoleto, corolla extus lepidota intus puberula, ovario lepidoto, stylo glabro notata.

Mid. W. Yunnan. Eastern flank of the Tali Range. Alt. 10,000–11,000 ft. Lat. 25° 40′ N. Amongst scrub and on ledges of cliffs. Shrub of 4-9 ft. Flowers lavender-rose. G. Forrest. No. 6771. May 1910.

This is a most distinct species, and if the flower tint is only right the plant should be an acceptable one in gardens. It is most floriferous, and in the dried specimens the flowers retain more colour than is the case in kindred species. In habit it recalls the *Rh. yanthinum* of our gardens, but the thickly-set scales of the under-leaf indumentum in that plant and its allies readily distinguish it and them. The scattered scale-indumentum on the under-leaf surface resembles that of *Rh. rigidum*, Franch., but *Rh. sycnanthum* may be recognised by absence of the wax bloom on the leaves, the total absence of hairs from young twigs, petiole, and groove of midrib on upper leaf-surface. This surface from the first is glabrous, not a hair appearing on it even in the groove of the midrib or in the groove of the petiole, nor is there a peltate scale. The few cilia which fringe the leaf-margin in bud fall off with expansion from the bud. Two other characters separate *Rh. sycnanthum* from *Rh. rigidum*—the flower-pedicels and calyx are lepidote and the flowers themselves larger.

Rhododendron zaleucum, Balf. f. et W. W. Sm.

Arbor ad 10.5 m. alta tenuiramosa ramulis subvirgatis. Ramuli hornotini circ. 2 mm. lati brunneo-lepidoti, annotini verruculosi, vetustiores grisei decorticantes. Alabastrorum perulae crustaceo-coriaceae exteriores fulvidae late ovatae rotundatae carinatae mucronulatae dorso cinereo-puberulae et lepidotae margine ciliatae, interiores ligulatae vel elongato-spathulatae membranaceae indumento simili circ. 3 cm. longae 4 mm. latae tandem

internodiis distinctis separatae. Folia circ. 7 cm. longa petiolata ; lamina adulta chartacea lanceolata ad 6 cm. longa 2 cm. lata apice acuminata costa media in tuberculum corneum excurrente margine paullo recurvata cartilaginea pedibus setarum delapsarum punctulata basi obtusa attenuata, supra pallide viridis laevis costa media sulcata puberula caeteroquin glabra venulis primariis utrinsecus circ. 10 vix conspicuis, subtus cinereo-alba strato papillarum epidermicarum ceriferarum induta et squamis peltatis haud immersis rufescenti-resinosis fere sessilibus umbone plano et instita lata aedificatis haud contiguis conspersa, juvenilis tenuiter membranacea purpureo- vel rubro-venulosa supra nigricans glabra subtus pallidior squamulis luteis lepidota margine setulosa ; petiolus circ. 1 cm. longus saepe purpureus lepidotus. Flores in umbellas partiales terminales et axillares 1–5-floras ad extremitates ramorum fasciculati fasciculis inter ramos subflorales praecoces immersis ; bracteae perulas alabastrorum simulantes ; bracteolae lineares subclaviformes circ. 1.3 cm. longae membranaceae brunneae puberulae et lepidotae ; pedicelli ad 1.3 cm. longi (sub fructu ad 2.5 cm.) lepidoti. Calyx parvus crateriformis cupula circ. 1 mm. longa dense lepidota, lobis 5 deltoideis vel rotundatis circ. 1.5 mm. longis saepe purpureis extus dense lepidotis apice setosis. Corolla alba roseotincta a basi infundibuliformis circ. 3.5 cm. longa extus lepidota, tubo intus paullo puberulo sursum in limbum 5-lobatum expanso, lobis ellipticis vel rotundatis emarginatis et crenulatis circ. 1.5 cm. longis 2 cm. latis. Stamina 10 inaequalia longiora ad basim loborum corollinorum attingentia, filamentis deorsum dilatatis basim versus pilosis, antheris circ. 2.5 mm. longis. Ovarium cylindricum circ. 4 mm. longum dense glandulosolepidotum ; stylus glaber staminibus longior corollam subaequans ; stigma lobulatum. Capsula cylindrica circ. 1.2 cm. longa 5 mm. lata glauca et rufo-lepidota. Semina oblonga circ. 1.5 mm. longa longitudinaliter striata ad extremitates obscure lobulato-carunculata pallide brunnea.

W. Yunnan. Western flank of the Shweli-Salween divide. Alt. 10,000–11,000 ft. Lat. 25° 25′ N. Shrub of 25–35 ft. Flowers rose ? In fruit. Rhododendron forest. G. Forrest. No. 8923. Aug. 1912.

W. Yunnan. Shweli-Salween divide. Alt. 9000 ft. Lat. 25° 30′ N. Shrub of 5 ft. Flowers white flushed rose. Open rocky slopes. G. Forrest. No. 12,065. June 1913.

W. Yunnan. Shweli-Salween divide. Alt. 9000 ft. Lat. 25° 25′ N. Shrub 4–5 ft. Flowers rose. Open rocky slopes. G. Forrest. No. 12,064. June 1913.

E. Upper Burma. Hpimaw. Alt. 9000–10,000 ft. Tall thin tree of 25–30 ft. In damp rain forest. Flowers pink and

slightly fragrant. Leaves with white bloom underneath. F. Kingdon Ward. No. 1568. 21st May 1914.

There is no doubt about the identity of Ward's Burmese plant (No. 1568) with Forrest's plant (No. 12,065) of the rhododendron forest of the Shweli-Salween divide. Nor do I think the identification with these of Forrest's fruiting plant (No. 8923) can be questioned. Yet the habitats of the Burmese and Yunnan plants are very different. Its growth as a shrub in Yunnan may be correlated perhaps with its habitat—rocky slopes. The white wax-coated underleaf is certainty more a character of open rocky slopes than of damp rain forest. Forrest's specimen (No. 12,064) must also, I think, be placed here. It has all the technical characters of the species but has smaller leaves.

The very white-grey under-side of the leaf is a striking feature of the species. The grey surface is composed of short cupola-like epidermal papillae coated with wax. The peltate scales have hardly any stalk and do not arise in a real pit of the surface, but only on a slight depression out of which they project and show a large broad central boss with a broad wing.

The whole characters seem to place this species in the series with fasciculate inflorescences to which *Rh. Augustinii,* Hemsl. and such like forms belong. The series is a rare one in West Yunnan, and I do not find any species which I would select as of particularly near affinity to *Rh. zaleucum.* But I have not had as yet material or opportunity to study satisfactorily the members of the series.

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Printed under the authority of His Majesty's Stationery Office
By Neill & Co., Ltd., Edinburgh.

Vol. X. FOR OFFICIAL USE. Numbers XLIX–L.

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ROYAL BOTANIC GARDEN,

EDINBURGH.

JULY 1918.

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EDINBURGH:
PUBLISHED BY HIS MAJESTY'S STATIONERY OFFICE

SOLD AT THE GARDEN,
And to be purchased, either directly or through any Bookseller, from
H.M. STATIONERY OFFICE (Scottish Branch),
23 Forth Street, Edinburgh.

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DIAGNOSES

Specierum novarum

in herbario Horti Regii Botanici Edinburgensis cognitarum.

CCCLI–CCCC.

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44409 **Anaphalis rhododactyla,** W. W. Sm. Sp. nov.

Species ex affinitate *A. chlamydophyllae,* Diels et *A. cuneifoliae,* Hook. f. et *A. yunnanensis,* Franch. a quibus involucri phyllis laete roseis inter alia dignoscitur.

Planta dense caespitosa, 10–20 cm. alta, e caudice lignoso multicipite foliis emarcidis dense induto oriens. Caules plures flexuosi erecti foliis basalibus et caulinis fere ex toto celati, longiuscule albo-araneoso-tomentosi. Folia radicalia numerosissima, rosulam formantia, ad 5 cm. longa, 5–9 mm. lata, spathulata vel lineari-spathulata vel lineari-oblonga, apice rotundata vel obtusissima, basi in petiolum haud discretum latum subscariosum attenuata, in sicco submembranacea, utrinque concoloria et albo-araneoso-tomentosa ; folia caulina radicalibus subsimilia plerumque lineari-oblonga, erecta et caulem plus minusque celantia, haud petiolata ; folia suprema inflorescentiam congestam quasi-involucrantia, apice saepe longiuscule apiculata. Inflorescentia subglobosa 2–3 cm. diametro capitulis 20–30 arcte compactis composita ; pedunculi 3–5 mm. longi dense araneoso-tomentosi ; capitula 7–8 mm. diametro ; involucri phylla lanceolata vel ovato-lanceolata, acuta, circ. 8 mm. longa, basi viridia ibique extra plus minusve tomentosa, supra scariosa glabra pulcherrime roseotincta ; flores circ. 5 mm. longi pappo albido 5–6 mm. longo praediti ; achaenia immatura circ. 1 mm. longa complanata glabra.

"China :—Mountains of the Chungtien plateau, Yunnan. Lat. 27° 30′ N. Alt. 12,000 ft. Plant of 4–8 inches. Phyllaries bright rose. Open stony pasture. July 1914." G. Forrest. No. 12,628.

This is a remarkably beautiful species.

Asystasia silvicola, W. W. Sm. Sp. nov.

Species *A. lanceolatae*, T. Anders. affinis a qua foliis saepius oblanceolatis longius petiolatis, calyce glanduloso-hirsutulo, corollae albae parte cylindra partem ampliatam subaequante, ovario glabro e descriptione divergit.

Planta 60–120 cm. alta erecta caulibus gracilibus parce ramosis teretibus glabris internodiis elongatis. Folia petiolo 1–2.5 cm. longo praedita ; lamina plerumque 10–16 cm. longa, 3–4 cm. lata, oblanceolata vel lanceolata, apice longiuscule acuminata, basi anguste cuneata, margine integra paululo undulata, membranacea, utrinque glabra, nervis 6–7 paribus subconspicuis. Inflorescentiae ramulos terminantes circ. 3 cm. longae spiciformes ; bracteae 5–10 mm. longae lanceolatae vel lineares glanduloso-hirsutulae. Calycis circ. 1 cm. longi segmenta linearia vel lineari-lanceolata glanduloso-hirsutula. Corolla alba circ. 2.5 cm. longa extra villosula ; tubi pars cylindrica circ. 1 cm. longa intus albo-villosula, pars superior subabrupte ampliata circ. 1 cm. longa ; lobi inaequales suberecti. Stamina 4 subaequalia filamentis glabris, antheris albidis uno latere minute pilosulis basi apiculo gracili instructis. Ovarium glabrum stylo sparsim albo-pilosulo. Fructus circ. 1.2 cm. longus glaber seminibus 4 complanatis margine subalatis glabris.

"China :—Yunnan, Szemao, forests to south at 4000 ft. ; shrubby, 2 ft. high, white flowers." A. Henry. No. 12,934.

"Yunnan, Szemao, East Mountains at 4500 ft. ; shrubby, 4 ft. high." A. Henry. No. 11,600A.

Chirita chlamydata, W. W. Sm. Sp. nov.

Species ex affinitate *C. urticaefoliae*, Ham. a qua calyce ad imum in lobos lineari-oblongos fisso inter alia signa recognoscitur.

Planta ut videtur 30–60 cm. alta. Caulis erectus pilis longis articulatis densissime et molliter indutus. Folia opposita subaequalia petiolo 2–5 cm. longo densissime piloso suffulta ; lamina 10–20 cm. longa, 5–8 cm. lata, ovata vel ovato-lanceolata vel subelliptica, saepe asymmetrica, apice longiuscule acuminata, basi late cuneata vel subrotundata, margine regulariter crenato-serrata et pilis articulatis dense ciliata, in sicco papyracea, supra atroviridis pilis adpressis densissime induta,

infra subincana laxiuscule pilosa vel subsetulosa, costa nervisque circ. 10 paribus subtus paulo eminentibus, utrinque in sicco subconspicuis. Inflorescentiae 3–5-florae; pedunculus circ. 10 cm. longus molliter et dense pilosus; pedicelli similiter induti, 5–10 mm. longi; bracteae 2.5–3.5 cm. longae, foliaceae, ovatae, calyces floresque inapertos plus minusve amplectantes, pilosae. Flores 5–5.5 cm. longi lilacini vel purpurei. Calyx 1.3–1.5 cm. longus, fere ad imum in lobos lineari-oblongos obtusos extra pilosos intus glabros fissus. Corollae bilabiatae anguste tubulosae tubus circ. 4.5–5 cm. longus, supra leniter ampliatus ad 1.5 cm. latus (in sicco), extra setulis articulatis densiuscule conspersus, intus glaber; lobi rotundati. Stamina perfecta duo inclusa in medium tubum inserta filamentis glabris. Ovarium cum stylo circ. 4 cm. longum dense albido-pilosum; stigma oblique expansum bilobulum. Capsula linearis 7–8 cm. longa.

China :—Yunnan, south of Red River from Manmei, 6000 ft.; Henry No. 9188A in Herb. Kew. et Edin.; at Feng-Chen Lin mountain forests, 7000 ft.; flowers purplish (?). Henry No. 9188B in Herb. Kew. et Edin.; Mengtze, 6000 ft., in ravine; Henry No. 9413B in Herb. Kew. et Edin.; Mengtze, in forests, 5500 ft., lilac flowers. Henry No. 9413A.

2065 **Chirita Dalzielii,** W. W. Sm. Sp. nov.

Species affinis *C. sinensi,* Lindl. a qua foliis longe petiolatis, corymbis 1–5-floris, calycis segmentis linearibus hirsutis inter alia differt; a *C. Juliae,* Hance foliis majoribus, lamina haud in petiolum attenuata sed abrupte separata, pedunculis pedicellisque longioribus, corollae forma recedit.

Planta acaulis. Folia 8–12 rosulam formantia, petiolis plerumque 3–8 cm. longis setis patentibus longis articulatis fulvis dense indutis; lamina majorum ad 15 cm. longa, ad 7 cm. lata, minorum circ. 6 cm. longa, circ. 3 cm. lata, plus minusve elliptica vel rarius ovata vel ovato-oblonga, apice obtusa, basi plus minusve rotundata vel raro asymmetrice cordatula, margine regulariter crenato-serrata, in sicco papyracea, supra setulis dense et scabridule induta et setis longis articulatis fulvis sparsis vel numerosis ad margines numerosioribus praedita, infra praesertim ad costam eminentem nervosque 6–8 paria dense et longiuscule fulvo-setosa. Inflorescentiae 1–5-florae; pedunculus 6–10 cm. longus, ascendens, dense et longiuscule fulvo-setosus; pedicelli similiter induti 1.5–2 cm. longi; bracteae 2–3 mm. longae, lineares vel lineari-oblongae, longe setosae. Flores 3–4 cm. longi, purpurei, intensius reticulato-venosi. Sepala 4–5 mm. longa, lineari-lanceolata, acuminata, fulvo-setosa. Corollae bilabiatae tubus circ. 2.5 cm. longus,

basi 5 mm. latus, mox ad 2 cm. ore ampliatus (in sicco complanatus), extra setulis articulatis conspersus intus glaber; lobi rotundati saepe apiculati 7–8 mm. diametro utrinque setosuli. Stamina perfecta duo inclusa. Stylus ad stamina attingens, cum ovario densissime pilosus, stigmate obliquo obscure bilobulo. Fructus deest.

"China :—Thai-yong, a mountain valley, 2000 ft. elevation, sixty miles west of the port of Swatow, surrounded by hills reaching 1000 ft. and intersected by glens richly wooded. Sept. 1898." J. M. Dalziel. No. 184.

Chirita umbricola, W. W. Sm. Sp. nov.

Species valde affinis *C. brevipedi,* Clarke a qua calycis lobis brevibus triangularibus, corollae tubo brevi pro latitudine inter alia recedit.

Planta acaulis vel fere acaulis. Folia pauca, plerumque 1–2, petiolo 4–6 cm. longo setulis articulatis fulvis vel ferrugineis densissime obsito suffulta; lamina plerumque 8–16 cm. longa, 4–8 cm. lata, plus minusve elliptica, apice obtusa vel obtusiuscula, basi oblique rotundata vel late cuneata, margine irregulariter crenato-serrata setulis articulatis setulosa, in sicco membranacea, supra atroviridis, setulis haud articulatis plus minusve dense instructa, subtus pallidior laxiuscule setulosa, ad costam nervosque 5–7 paria conspicuos paulo densius setulosa. Inflorescentiae 1–5-florae; pedunculus 6–10 cm. longus, ascendens, setulis articulatis ferrugineis dense obsitus; pedicelli similiter induti 1–1.5 cm. longi; bracteae circ. 3 mm. longae lineari-oblongae, obtusiusculae, ferrugineo-setosulae. Flores 3–3.5 cm. longi, coerulei vel violacei vel albi. Calyx circ. 1.2 cm. longus, tubulosus, ad tertiam partem in lobos triangulares acutos fissus, extra sparsim setulosus. Corollae bilabiatae tubus 2.5 cm. longus vel paulo longior, basi lato ad os (1.6 cm. latum in sicco complanatum) ampliatus, extra setulis articulatis hic illic conspersus, intus glaber; lobi rotundati circ. 1 cm. diametro. Stamina perfecta duo inclusa filamentis tantum 7–8 mm. longis dense pilosis; staminodia duo. Ovarium cum stylo circ. 1.8 cm. longum pilis articulatis minutis dense obsitum; stigma oblique bilobulum. Fructus deest.

"Upper Burma :—Ridge of Naung-chaung, Nwai divide; 6000–8000 ft.; flowers violet blue or white, on wet rocks of shady gullies or by streams in forest. July 1914." F. K. Ward. No. 1824.

U427

Chrysanthemum jugorum, W. W. Sm. Sp. nov.

Species valde affinis *Chrysanthemo Atkinsoni*, C. B. Clarke a quo habitu minore, caudice multicipite, foliis minoribus, involucri phyllis longiuscule albido-pilosis inter alia recedit.

Planta perennis plerumque 15–20 cm. alta ; caudicis multicipitis rami arcte in glebam congesti, foliorum delapsorum vaginis emarcidis dense induti ; radix crassa. Caules erecti rigidiusculi bene foliati, dense et longiuscule albo-pilosi. Folia radicalia numerosa, petiolo 2–3 cm. longo albo-piloso in vaginam latam stramineam glabram vel pilosam ampliato praedita ; lamina plerumque 3–4 cm. longa, 1–1.5 cm. lata, ambitu oblonga, bipinnatisecta, segmentis ultimis 3–4 mm. longis linearibus acutis longe mucronatis sparsim sed longiuscule albido-pilosis ; caulina radicalibus subsimilia, vix petiolata, cauli subadpressa, densius albido-pilosa. Capitula solitaria 2–2.5 cm. diametro ; involucri phylla 5–8 mm. longa, numerosa, oblonga vel lineari-oblonga, acuta vel obtusiuscula, longiuscule albido-pilosa, medio viridia vel flavido-viridia, margine purpureo-scariosa ; flores ligulati circ. 1.2 cm. longi recurvati flavi ; flores disci circ. 4 mm. longi acheniis complanatis glabris, pappo nullo. Achaenia matura desunt.

" China :—Yunnan, on the Bei-ma-Shan, Mekong-Yangtze divide. Lat. 28° 20′ N. Alt. 14,000 ft. Stony moist pasture. Plant of 3–9 inches. Ray florets deep orange, disc florets orange and olive-green. Sept. 1914." G. Forrest. No. 13,354.

This new species is a close ally of the East Himalayan *Chrysanthemum Atkinsoni*, C. B. Clarke.

4352

Var. **tanacetopsis,** W. W. Sm. Var. nov.

Haec planta varietas eradiata praecedentis esse videtur. Caules numerosi e caudice longo lignoso ascendente vaginis emarcidis induto orientes ad 35 cm. alti longiuscule sed vix dense albo-pilosi. Folia radicalia numerosa ad 8 cm. longa, bipinnatisecta ut in typo, sparsim albido-pilosa vel etiam subglabrescentia ; caulina radicalibus subsimilia, epetiolata, subpatentia. Capitula solitaria circ. 2 cm. diametro ; involucri phylla ut in typo sed minus pilosa ; flores ligulati nulli.

" China :—Yunnan, on the Kari pass, Mekong-Yangtze divide. Lat. 27° 40′ N. Alt. 13,000–14,000 ft. Open moist stony pasture. Plant of 9–14 inches. Flowers deep orange. July 1914." G. Forrest. No. 12,897.

This plant bears a strong resemblance to *Tanacetum Delavayi*, Franch., especially such forms of the latter as suggest a single solitary capitulum.

Daedalacanthus Wardii, W. W. Sm. Sp. nov.

Species valde affinis *D. purpurascenti*, T. Anders. et *D. ciliato*, Craib a quibus caule fulvo-hirsuto, foliis utrinque plus minusve pubescentibus, inflorescentiis minoribus subcapitatis, bracteis subtus fulvo-pilosis, corolla minore divergit.

Frutex ad 1 m. altus erectus sparsim ramosus. Caules supra densius infra laxius fulvo-hirsuti. Folia petiolo 1–1.5 cm. longo dense fulvo-hirsutulo praedita ; lamina foliorum superiorum ad 8 cm. longa, ad 3.5 cm. lata, elliptico-lanceolata vel subelliptica, apice breviter acuminata, basi late cuneata vel subrotundata, margine undulata, supra ad costam fulvo-pubescens setulis hic illic conspersa, utrinque lineolata, infra ad costam nervosque dense fulvo-pubescens caeterum sparsim puberula. Inflorescentiae pedunculo 1 cm. longo (vel tandem aucto) dense fulvo-hirsuto praeditae, subcapitatae pauciflorae ; bracteae ad 2 cm. longae, lanceolatae, acuminatae, apice ipso obtusiusculae, longe ciliatae, utrinque praecipue ad costam venasque conspicuas fulvo-hirsutulae ; bracteolae lineari-lanceolatae calycem subaequantes. Calyx circ. 3 mm. longus in lobos 5 lineari-lanceolatos acutos ad medium divisus pubescens. Corolla 2.5–3 cm. longa, laete violacea, pubescens, tubo paulo curvato, limbo circ. 1 cm. diametro, lobis oblongis. Stamina duo e tubo corollino paulo exserta. Ovarium stylusque sparsim hirsutuli.

" Upper Burma :—River-bed between Putao and Myitkyina. In open sandy places on edge of jungle. Small lax undershrub of 2–3 ft. Flowers bright violet. December 1914." F. K. Ward. No. 2003.

This Burmese plant is a close ally of the Indian *D. purpurascens*, T. And., which extends through Assam into Burma.

Dicliptera elegans, W. W. Sm. Sp. nov.

Species affinis *D. chinensi*, Nees a qua bracteis fere orbicularibus, pedunculis pedicellisque densissime albo-tomentosis inter alia recedit.

Planta 60–120 cm. alta erecta caulibus supra gracilibus sulcatis (sulcis tomento albido saepe impletis) ceterum sparsim pubescentibus. Folia superiora tantum visa petiolo 1.5–2 cm. longo anguste alato plus minusve hirsuto suffulta ; lamina 7–8 cm. longa, ad 4 cm. lata, ovata vel ovato-lanceolata, apice acuminata, basi late cuneata in petiolum decurrens vel subrotundata, margine integra, tenuiter membranacea, supra atroviridis sparsim pilosula ad costam dense fulvo-pilosa, infra pallidior ubique sparsim pilosula. Inflorescentia paniculata ampla ; pedunculi primarii ex axillis superioribus orientes ad

7 cm. longi tomento albo detersili saepa induti, apice bracteis lineari-subulatis ad 1 cm. longis saepe pilosis praediti ; pedunculi secundarii 3–6-nati, 5–10 mm. longi, albo-tomentosi vel dense fulvido-pilosi ; bracteae florales inaequales suborbiculares, circ. 1.5 cm. longae, circ. 1.3 cm. latae, apice longiuscule mucronatae, basi rotundatae, virides, tenuiter membranaceae, extra sparsim pilosulae et lineatae, intus lineatae, flores 3–4 bracteolasque includentes ; bracteolae 5–7 mm. longae lineari-lanceolatae longe acuminatae minute puberulae vel albo-pilosulae. Calyx 6–7 mm. longus in lobos 5 lineari-lanceolatos acuminatos minute puberulos partitus. Corollae circ. 1.8 cm. longae pallido-roseae tubus gracilis extra plus minusve albido-pilosulus, limbus alte bilabiatus. Stamina 2 antheris bicellulatis. Ovarium minute pilosulum stylo filiformi.

" China :—Descent to the Yangtze from the eastern boundary of the Lichiang Valley. Lat. 27° 15′ N. Alt. 9000 ft. Semi-shrubby plant of 2–4 ft. Flowers pale rose. Shady open situations on the margins of thickets. July 1913." G. Forrest. No. 10,697.

A graceful plant with very characteristic bracts.

Dicliptera induta, W. W. Sm. Sp. nov.

Species affinis *D. Roxburghianae,* Nees a qua caulibus dense fulvo-hirsutulis, bracteis rigidis papyraceis inter alia recedit.

Caules ramosi primo dense fulvo-tomentosi, deinde hirsutuli. Folia petiolo circ. 1 cm. longo fulvo-tomentoso vel fulvo-hirsutulo praedita ; lamina 3–4 cm. longa, 1.5–2.5 cm. lata, ovata, apice plus minusve acuta, basi late cuneata vel subrotundata, integra, membranacea, utrinque ad costam nervosque densiuscule fulvo-pilosa ceterum sparsim pilosa. Inflorescentiae cymosae cymulis axillaribus brevipedunculatis, terminalibus non visis ; pedunculi primarii et secundarii brevissimi vix 2–3 mm. superantes dense fulvo-hirsutuli ; bracteae inferiores circ. 5 mm. longae lineari-subulatae pilosulae ; bracteae florales inaequales oblanceolatae 1–1.4 cm. longae, apice acutatae et mucronatae, basi cuneatae, opaco-virides, rigidae subpapyraceae, utrinque pilosulae ; bracteolae ad 1 cm. longae lineari-lanceolatae longissime acuminatae pilosae. Calyx circ. 5 mm. longus in lobos 5 lineares acutissimos puberulos divisus. Corollae ad 1.5 cm. longae tubus gracilis extra albido-pilosulus. Stamina 2 antheris bicellulatis, polline typico. Ovarium minute pilosulum.

" China :—N.E. Yunnan. Plain of Kiao-Kiou. Alt. 400 m. Flowers rose." Maire in Herb. Edin. under 826/1913.

A weedy plant of the cultivated area. I cannot match this among the Indo-Chinese species of *Dicliptera.*

Elsholtzia penduliflora, W. W. Sm. Sp. nov.

Species affinis *E. polystachyae,* Benth. a qua verticillastris remotioribus, floribus majoribus plus minusve pendulis, fructibus pendulis inter alia signa bene notata.

Planta suffruticosa aromatica ad 1.2 m. alta, ramis quadratis, glandulis nitentibus pilisque brevibus crispatis conspersa. Folia membranacea petiolo 2–5 mm. longo rubrido sparsim pilosulo praedita ; lamina foliorum superiorum 6–16 cm. longa, 2–4 cm. lata, lanceolata, apice sensim et longiuscule acuminata, basi late cuneata vel subrotundata, margine regulariter serrata, supra ad costam nervosque furfuraceo-pilosula, infra subglabra nitenti-succino-glandulosa, costa nervisque prominulis rubidis. Inflorescentiae terminales et axillares ; terminalis fructifera ad 22 cm. longa ; rhachis plus minusve albido-pilosa ; verticillastri 6–12-flori laxiuscule approximati inflorescentiam angustam subspiciformem formantes ; pedicelli 2–4 mm. longi plus minusve pendentes ; bracteae lineares vel lineari-oblongae pedicellos vulgo duplo superantes. Flores parvi albi. Calyx circ. 3 mm. longus fructu ad 5 mm. auctus, tubuloso-campanulatus glaber ; lobi circ. 1.25 mm. longi subulato-lineares. Corollae tubus paululo exsertus, lobi rotundati, posticus emarginatus. Stamina 4 paulo exserta. Nuculae ovoideae circ. 1.25 mm. longae pallide brunneae.

" China :—Western flank of the Tali Range. Lat. 25° 40′ N. Alt. 10,000 ft. Aromatic half-shrubby plant of 4 ft. Flowers white. Open scrub in side valleys. July 1913." G. Forrest. No. 11,686.

Eranthemum shweliense, W. W. Sm. Sp. nov.

Species affinis *E. albo,* Nees a quo ramulis hispidulis, foliis senioribus sub anthesi deciduis, inflorescentiis plus minusve aggregatis, corollae tubo breviore recedit ; caulibus supra lignosis, floribus albis cum illa specie congruit.

Planta 1–2 m. alta erecta caulibus supra lignosis cinerascentibus, juvenilibus primo hispidulis. Folia seniora sub anthesi decidua nobis non visa ; folia juniora petiolo 3–5 mm. longo dense fulvo-hirsutulo praedita ; lamina 2.5–5.5 cm. longa, 1–2 cm. lata, lanceolata vel ovato-lanceolata vel subelliptica, apice obtusiuscula vel acutata nunc apiculata, basi plus minusve cuneata in petiolum decurrens, margine integra, membranacea, supra atroviridis ubique minute papillata, ad costam sparsim pilosula, infra opaco-olivacea ad costam densiuscule fulvido-pilosula caeterum sparsim pilosula vel glabrescens. Inflorescentiae 7–15 cm. longae spiciformes ad apices ramulorum dispositae, plus minusve aggregatae, rhachi dense fulvo-pilosula,

floribus fasciculatis ; bracteae circ. 3 mm. longae lineares vel lineari-lanceolatae ut rhachis pilosulae. Calyx circ. 5 mm. longus in lobos 5 lineari-oblongos acutos fere ad imum fissus plus minusve pilosulus. Corollae albae tubus circ. 2.2 cm. longus cylindricus supra haud ampliatus extra minute pilosulus intus albo-pilosus, limbus 1.8–1.9 cm. latus, lobi ovales quinque quorum duo violaceo-maculati. Stamina 2 e tubo corollino paululo exserta. Ovarium glabrum stylo filiformi infra saepe sparsim piloso.

"China :—Valley of the Shweli, Yunnan. Lat. 25° N. Alt. 6000 ft. Shrub of 3–6 ft. Flowers white or very pale lavender with violet markings on lower lobe. Open situations. May 1913." G. Forrest, No. 9859.

"Mengtze, S.W. Mountains ; 4000 ft. ; shrub 4 ft. ; white flowers." A. Henry. No. 11,010.

1444 **Eranthemum tapingense,** W. W. Sm. Sp. nov.

Species ex affinitate *E. indici,* Clarke a quo foliis angustioribus 7–12-nerviis, calyce duplo majore aliter fisso, corolla minore rosea nec alba inter alia recedit.

Planta circ. 1 m., alta erecta vel suberecta caulibus lignosis glabris vel subglabris primo atro-coloratis deinde decorticantibus ad internodia stramineis prope nodos atro-persistentibus. Folia petiolo 2–2.5 cm. longo sparsim puberulo glabrescente suffulta ; lamina ad 17 cm. longa, 3–5 cm. lata, rarius ad 7 cm., lanceolata vel oblongo-lanceolata, apice acuminata, basi cuneata, margine undulata, membranacea, supra opaco-viridis glabra vel cito glabrescens minute lineolata, infra pallidior glabra vel subglabra, nervis plerumque 8–12-paribus, Inflorescentiae racemiformes terminales vel axillares simplices vel ramosae 7–20 cm. longae, plus minusve secundiflorae, pedunculis sparsim pilosulis vel glabrescentibus, bracteis 2–3 mm. longis pilosulis vel subglabris, pedicellis 2–3 mm. longis. Calyx circ. 1 cm. longus subtubulosus ad medium vel vix ad medium in lobos inaequales anguste triangulares acutos fissus atro-ruber glaber. Corolla 2.5 cm. longa vel paulo longior leviter curvata rosea ; tubus 2 cm. longus dimidio inferiore cylindricus, dimidio superiore tubuloso-ventricosus, extra minute puberulus ; labium inferius trilobum lobis subrotundatis saepe minute erosulis, labium superius bilobulatum. Stamina 2 filamentis complanatis sparsim pilosulis antheris 4 mm. longis bicellulatis. Stylus filiformis minute pubescens stigmate breviter bifido ; ovarium glabrum.

"Burma :—Taping Valley, Upper Burma. Lat. 24° 20′ N. Alt. 2000 ft. Shrubby plant of 2–4 ft. Flowers pale rose. In shady jungle. Feb. 1913." G. Forrest. No. 9655.

"Valley of the Taping. Lat. 24° 25′ N. Alt. 3000 ft.

Plant of 2 ft. Flowers pale rose. Shady moss-covered rocks. Jan. 1913." G Forrest. No. 9484.

"Valley of the Taping. Lat. 24° 30′ N. Alt. 2000 ft. Shrubby plant of 3–4 ft. Flowers pale purplish-rose. Shady situations by streams. Feb. 1914." G. Forrest. No. 12,149.

A species closely allied to *E. indicum*, Clarke and *E. lateriflorum*, Clarke, differing from both in the calyx. These three plants are undoubtedly congeneric, and differ markedly in the corolla from the typical members of the genus. *E. indicum* has been referred to the American *Thyrsacanthus* (otherwise *Odontonema*), to *Asystasia*, to *Mackaya* (South African), and has been made the type of a new genus by Lindau, *Odontonemella*. There is much to be said in favour of Lindau's grant of generic rank.

Helicia annularis, W. W. Sm. Sp. nov.

Species quoad flores affinis *H. silvicolae*, W. W. Sm. infra descriptae sed subglabra et foliis minoribus tenuiter membranaceis, et squamis hypogynis in annulum connatis inter alia divergit.

Arbor parva ad 6 m. alta. Ramuli graciles glabri brunnei tandem cinerascentes. Folia petiolo circ. 1 cm. longo gracili glabro instructa ; lamina plerumque 8–12 cm. longa, 3–4.5 cm. lata, plus minusve elliptica, apice breviter et obtusiuscule caudato-acuminata, basi late cuneata, margine serratulis satis grossis indurato-apiculatis notata vel nonnunquam subintegra, in sicco tenuiter membranacea, seniora subpapyracea, utrinque opaco-viridis glabra vel cito glabra, costa utrinque eminente, nervis 6–8 paribus gracillimis, reticulo venularum subinconspicuo. Inflorescentiae 9–16 cm. longae ex axillis foliorum subpersistentium ortae, erectae, multiflorae, basi excepto floriferae ; rhachis glabra vel cito glabrescens ; bracteae bracteolaeque minimae, fere squamiformes, ovatae ad lineares, pilosulae ; pedicelli 2–3 mm. longi pilosuli vel subglabri, solitarii vel 2–3-fasciculati. Flores 11–12 mm. longi extra glabri pallido-flavidi. Antherae fere 3 mm. longae. Ovarium circ. 2.5 mm. longum glabrum stylo gracili glabro. Squamae hypogynae in annulum circ. 1 mm. altum connatae. Fructus immaturus ovideus fere niger.

"China :—Yunnan ; Szemao woods at 4600 ft., tree 20 ft., with pale yellow flowers." A. Henry. No. 12,315.

Henry No. 12,315B from tree of 10 ft. with blackish fruit appears to be the same.

Helicia clivicola, W. W. Sm. Sp. nov.

Species affinis *H. excelsae,* Bl. et *H. pyrrhobotryae,* Kurz a quibus costa nervisque utrinque ferrugineo-tomentosis inter alia cognoscitur.

Arbor 8–12 m. alta. Ramuli primo dense molliterque ferrugineo-tomentosi, postea incanescentes, tarde glabrescentes. Folia petiolo 1.5–2.5 cm. longo dense ferrugineo-tomentoso suffulta ; lamina 14–19 cm. longa, 8–9 cm. lata, obovata vel late oblanceolata, apice circuitu rotundata apice ipso saepe breviter acuminata, basi sensim in petiolum cuneata, margine integra vel denticulis rarissimis notata subundulata, in sicco subcoriacea, supra atroviridis, infra multo pallidior, costa nervisque 7–9 paribus supra paululo eminentibus primo ferrugineo-tomentosis tandem glabrescentibus infra prominulis tomento denso ferrugineo persistente indutis, reticulo venularum utrinque conspicuo. Inflorescentiae spiciformes ad 20 cm. longae, in axillis foliorum subpersistentium vel nuperrime delapsorum ortae, undique floriferae, dense ferrugineo-tomentosae ; bracteae bracteolaeque circ. 1 mm. longae, lineari-lanceolatae vel lineares, longiuscule ferrugineo-hirsutae ; pedicelli 2–3 mm. longi sparsim tomentosi vel glabrescentes. Flores circ. 1.5 cm. longi, extus glabri, laete lutei, fragrantes. Antherae 3 mm. longae. Ovarium stylusque glabri. Squamae hypogynae late oblongae liberae. Fructus deest.

" China :—Yunnan ; hills to the south of Tengyueh. Lat. 25° N. Alt. 6000–7000 ft. Tree of 25–40 ft. Flowers bright yellow, fragrant. In thickets. June 1912." G. Forrest. No. 8333.

Helicia pallidiflora, W. W. Sm. Sp. nov.

Species affinis *H. terminali,* Kurz a qua inflorescentiis lateralibus nec terminalibus, rhachibus pedicellisque plus minusve ferrugineo-tomentellis nec glabris recedit ; ab *H. excelsa,* Bl. ovario glabro inter alia cognoscitur.

Arbor parva ex collectore ad 7.5 m. alta. Ramuli primo ferrugineo - tomentelli, mox glabrescentes, seniores glabri cinerei. Folia petiolo 5–15 mm. longo gracili supra alato sparsim ferrugineo-hirsutulo suffulta ; lamina plerumque 15–24 cm. longa, 4–7 cm. lata, oblanceolata, apice acuta vel breviter acuminata vel nonnunquam subrotundata, basi in petiolum cuneatim attenuata, margine integra paululo undulata, in sicco juniora membranacea, supra atroviridis sublucida, infra vix pallidior, utrinque glabra, costa nervisque 7–9 paribus cum reticulo venularum utrinque plus minusve eminentibus. Inflorescentiae 12–25 cm. longae ex axillis foliorum delapsorum

ortae, graciles, ut videtur plus minusve pendentes, multiflorae, basi nudae; rhachis plus minusve ferrugineo-tomentella, basi glabrescens; bracteae bracteolaeque lineares vel subulatae 1–2 mm. longae tomentellae; pedicelli 6–8 mm. longi tomentelli simplices vel saepe biflorae. Flores 12–13 mm. longi, extra plerumque sparsim tomentelli pallido-flavidi. Antherae circ. 3 mm. longae. Ovarium parvum circ. 1 mm. longum glabrum stylo gracili glabro. Squamae hypogynae oblongo-quadratae liberae. Fructus deest.

"China :—Yunnan; Szemao forests at 5000 ft.; tree 25 ft., with pale yellow flowers." A. Henry. No. 11,910A.

Henry Nos. 11,910 and 11,910B in Herb. Edin. appear to be the same species.

Helicia shweliensis, W. W. Sm. Sp. nov.

Species ex affinitate *H. erraticae,* Hook. f. a qua bracteis conspicuis foliaceis viridibus inter alia dignoscitur.

Arbor 5–10 m. alta. Ramuli glabri vel subglabri nisi ad insertiones foliorum rufo-tomentellas, seniores brunnescentes vel nigricantes. Folia juniora petiolo 2–3 mm. longo glabro (nisi ad basim ipsam) praedita; lamina plerumque 6–9 cm. longa, 2.5–3.5 cm. lata, obovata vel oblanceolata, apice acuta vel e circuitu rotundato breviter abrupteque acuminata, basi in petiolum sensim attenuata, margine denticulis glanduloso-apiculatis conspicuis notata, in sicco membranacea, glaberrima, supra atroviridis infra flavido-viridis, costa nervisque 6–7 paribus utrinque paululo eminentibus; folia seniora in specimini-bus fructiferis saepe majora ad 13 cm. longa, ad 5 cm. lata subcoriacea ad 7 mm. petiolata. Inflorescentiae spiciformes 7–11 cm. longae, ex axillis foliorum delapsorum ortae, undique floriferae, glabrae; bracteae conspicuae 5–20 mm. longae foliaceae lanceolatae vel lineari-lanceolatae virides glabrae; bracteolae circ. 2 mm. longae; pedicelli 3–4 mm. longi glabri. Flores circ. 1.3 cm. longi, extra glabri, laete lutei, fragrantes. Antherae 3 mm. longae. Ovarium stylusque glabri. Squamae hypogynae rotundatae liberae. Fructus vix maturus circ. 1 cm. diametro ovoideus.

"China :—Yunnan, valley of the Shweli (Lung Chiang). Lat. 25° N. Alt. 6000 ft. Shrub or tree of 15–30 ft. Flowers bright lemon yellow, fragrant. In thickets. May 1912." G. Forrest. No. 7852.

The following in fruit appear to be the same :—

"Yunnan, divide between the Shweli and Tengyueh Valleys. Lat. 25° N. Shrub of 6–12 ft. In fruit. In open thickets. Alt. 7000 ft. July 1912." G. Forrest. No. 8766.

"Yunnan, Shweli Valley. Lat. 25° N. Alt. 7000 ft.

Shrub of 15–20 ft. In fruit. In thickets. Dec. 1912." G. Forrest. No. 9455.

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Helicia silvicola, W. W. Sm. Sp. nov.

Species affinis *H. excelsae*, Bl. a qua ovario glabro facile distinguitur ; haud procul ab *H. pallidiflora*, W. W. Sm. supra descripta quae foliis floribusque divergit.

Arbor parva ex collectore ad 6 m. alta. Ramuli primo dense et longiuscule ferrugineo-tomentosi, tarde glabrescentes. Folia petiolo 2–3 cm. longo dense ferrugineo-tomentoso instructa ; lamina 15–25 cm. longa, 3–6 cm. lata, plerumque oblanceolata, apice acuminata, basi in petiolum cuneatim attenuata, margine serratulis crebris rigidis glanduloso-apiculatis notata, in sicco papyracea, supra opaco-viridis infra vix pallidior, utrinque glabra vel subglabra nisi ad costam primo plus minusve ferrugineo-tomentellam tandem saepe fere glabram, costa nervisque 10–12 paribus infra eminentibus, reticulo venularum utrinque subconspicuo. Inflorescentiae ad 15 cm. longae ex axillis foliorum subpersistentium ortae, erectae vel suberectae, multiflorae, fere undique floriferae ; rhachis dense ferrugineo-tomentosa ; bracteae bracteolaeque ovato-lanceolatae ad lineares, 2–3 mm. longae, tomentellae ; pedicelli 2–4 mm. longi, ferrugineo-hirsuti mox glabrescentes, solitarii vel plerumque 2–4-fasciculati. Flores 11–12 mm. longi extra glabri pallido-flavidi. Antherae circ. 3 mm. longae. Ovarium circ. 2 mm. longum glabrum stylo gracili glabro. Squamae hypogynae oblongo-quadratae basi paululo cohaerentes. Fructus deest.

" China :—Yunnan. Szemao forests at 6500 ft. Tree 20 ft. With pale yellow flowers." A. Henry. No. 13,075.

Helicia vestita, W. W. Sm. Sp. nov.

Species affinis *H. grandi*, Hemsl. a qua foliis minoribus satis longe petiolatis, racemis erectis ex axillis foliorum subpersistentium ortis, floribus minoribus, imprimis ovario dense et longiuscule ferrugineo-hirsuto divergit.

Arbor circ. 9 m. alta. Ramuli primo densissime et molliter ferrugineo-tomentosi tarde glabrescentes. Folia petiolo plus minusve 2.5 cm. longo dense ferrugineo-tomentoso praedita ; lamina ad 22 cm. longa, ad 8 cm. lata, anguste obovata vel oblanceolata, apice sensim acutata vix acuminata, basi in petiolum cuneatim angustata, margine denticulis conspicuis remotiusculis notata, in sicco subcoriacea, supra viridis lucida, glabra nisi ad costam basi ferrugineo-tomentosam, infra tomento detersili denso crispato ferrugineo velata, costa nervisque 7–8

paribus supra vix eminentibus infra elevatis, reticulo venularum utrinque conspicuo. Inflorescentiae spiciformes ad 14 cm. longae, in axillis foliorum subpersistentium ortae, fere ad basim floriferae, densissime ferrugineo-tomentosae; bracteae inconspicuae adpressae anguste ovatae dense tomentosae; pedicelli 2 mm. longi, crassi tomentosi. Flores 2–3-fasciculati vel solitarii, circ. 2 cm. longi, extra densissime ferrugineo-tomentosi. Antherae circ. 4 mm. longae. Ovarium circ. 2.5 mm. longum dense ferrugineo-hirsutum, stylo gracili glabro. Squamae hypogynae subquadratae liberae. Fructus deest.

"China :—Yunnan. Mountains south of Szemao. 4500 ft. Tree of 30 ft." A. Henry. No. 12,159.

Hemigraphis fluviatilis, Clarke Mss. in Herb. Kew. descr. W. W. Sm.

Species inter affines indicas atque sinenses floribus parvis flavis bene notata.

Planta ad 18 cm. alta basi lignosa atque saepe multicaulis; caules basi decumbentes dense albido- vel fulvido-strigoso-hirsuti. Folia petiolo 2–3 mm. longo strigoso-hirsuto suffulta supra subcongesta; lamina ad 3.5 cm. longa, ad 1 cm. lata, lanceolata vel elliptico-lanceolata, apice obtusiuscula, basi cuneata, margine crenato-serratula, in sicco papyracea, supra opaco-viridis infra paulo pallidior, utrinque dense albido-strigoso-hirsuta; nervi 4–5 paria supra obscuri, infra eminentes. Flores plerumque in spicas subglobosas circ. 2.5 cm. longas circ. 2 cm. latas congestas basi bene foliatas dispositi; pauci nonnunquam in axillis inferioribus; bracteae bracteolaeque lanceolatae ad lineares circ. 1 cm. longae strigoso-hirsutae. Calyx circ. 8 mm. longus strigoso-hirsutus in lobos lineares acutos fere ad imum fissus. Corolla ad 1 cm. longa flava glabra; tubus basi cylindricus supra sensim ampliatus; lobi rotundati circ. 2 mm. diametro. Stamina perfecta 4 filamentis sparsim pilosulis, polline typico. Ovarium oblongum apice dense albido-pilosulum; stylus pilosulus. Fructus oblongus seminibus circ. 8.

"China :—Yunnan, Red River bank, in sand, near Manpan. Yellow flowers." Henry in Herb. Kew. et Herb. Edin. No. 9535.

Justicia albovelata, W. W. Sm. Sp. nov.

Species affinis *J. quadrifariae,* Wall. affinis a qua caulibus longissime et dense albo-pilosis inter alia signa differt.

Fruticulus basi crassus ramosissimus caules numerosos annuos 25–40 cm. altos flexiles bene foliatos pilis longissimis albis patentibus densissime indutos emittens. Folia petiolo 3–5

mm. longo pilis iisdem dense obsito suffulta ; lamina ad 3.5 cm. longa, ad 1.4 cm. lata, lanceolata rarius subelliptica, apice obtusiuscula, basi cuneata, integra, membranacea, pilis longis albis supra sparsius infra densius praedita. Flores in axillis fere omnibus orientes circ. 4-fasciculati ; bracteae 5–10 mm. longae, orbiculari-spathulatae vel obovatae, ut folia indutae ; bracteolae parvae oblanceolatae vel lineares similiter indutae ; pedicelli brevissimi. Calyx pallide viridis 5–6 mm. longus in lobos lineari-lanceolatos acuminatos ad costulam albo-pilosos fere ad imum fissus. Corollae circ. 9 mm. longae pallido-flavidae extra albo-pilosulae tubus limbo paulo longior supra ampliatus ; limbi labium posticum brevissime bifidum, anticum trilobum lobis brevibus mediano majore. Stamina 2 filamentis infra pilosulis antherarum loculis inferioribus longiuscule albo-calcaratis. Ovarium maturum glabrum seminibus quatuor minute tuberculatis.

" China :—On the Tong Shan in the Yangtze bend, Yunnan. Lat. 27° 20′ N. Alt. 9000 ft. Plant of 10–16 inches. Flowers pale yellow. Open stony situations. Sept. 1913." G. Forrest. No. 10,996.

The densely white-haired stems mark this out from *J. quadrifaria*, Wall. and its allies.

Justicia microdonta, W. W. Sm. Sp. nov.

Species affinis *J. Gendarussae*, Linn. f. a qua foliis longe recedit.

Frutex ad 2 m. altus ramosissimus caulibus primo sparsim pilosulis mox glabrescentibus cinerascentibus. Folia petiolo circ. 1 cm. longo sparsius pilosulo praedita ; lamina ad 6.5 cm. longa, ad 3.5 cm. lata, plerumque ovata, apice obtusiuscule brevi-acuminata, basi late cuneata in petiolum longe decurrens, integra, tenuiter membranacea, supra opaco-viridis ad costam nervosque marginemque fulvido-pilosula ceterum minute pubescens, infra subolivacea tantum ad costam nervosque pilosula. Inflorescentiae spiciformes 7–10 cm. longae ramulos terminantes interruptae ; pedunculus brevis ; rhachis plus minusve dense pilosula ; flores 2–4-fasciculati pedunculis secundariis pedicellisque brevissimis suffulti ; bracteae bracteolaeque 3–5 mm. longae lineari-lanceolatae pilosulae. Calyx circ. 5 mm. longus pilosulus in lobos lineari-lanceolatos acutos fere ad imum fissus. Corollae circ. 1.3 cm. longae albae roseo-tinctae extra plus minusve pilosulae tubus limbo paulo longior basi latiusculus supra sensim ampliatus ; limbi labium posticum breviter bifidum, anticum trilobum lobis 4–5 mm. longis intus pilosulis margine minute ciliatis. Stamina 2 filamentis infra complanatis pilosulis, antherarum loculis inferioribus minute

albo-calcaratis. Ovarium glabrum stylo densiuscule pilosulo. Fructus maturus circ. 2 cm. longus seminibus 4 complanatis 3–4 mm. diametro rugoso-verruculosis.

"China :—Mountains of the Chungtien plateau, Yunnan. Lat 27° 30° N. Alt. 10,000 ft. Shrub of 4–6 ft. Flowers white, flushed rose, with a few deeper coloured markings, amongst open scrub. July 1914." G. Forrest. No. 12,822.

"Yangtze Valley at Pung-tzu-la, Yunnan. Lat. 28° 12′ N. Alt. 7000 ft. Shrub of 4 ft. Flowers creamy-white. Open dry situations amongst rocks. Aug. 1914." G. Forrest. No. 13,162.

Justicia Wardii, W. W. Sm. Sp. nov.

Species affinis *J. siccaneae,* W. W. Sm. a qua floribus fasciculatis bracteis bene praeditis fere duplo majoribus inter alia divergit.

Fruticulus diffusus ad 60 cm. altus ; caules flexuosi ramosi primo dense cinereo-tomentelli mox glabrescentes substraminei. Folia petiolo circ. 5 mm. longo cinereo-pilosulo praedita ; lamina ad 4.5 cm. longa, ad 2 cm. lata (in foliis superioribus tantum visis), elliptica vel elliptico-lanceolata vel oblanceolata nunc obovata, apice breviter acuminata vel acuta vel rarius rotundata, basi cuneata, margine paulo undulata, tenuiter papyracea, utrinque sparsim pilosula ; juvenilia incano-tomentella. Flores ad 2 cm. longi, in axillis superioribus 4–6-fasciculati, haud terminales, inflorescentiam subspicatam interruptam formantes ; pedicelli 2–3 mm. longi vel obsoleti ; bracteae numerosae subinvolucrantes circ. 5 mm. longae lineari-lanceolatae dense cinereo-pilosulae. Calyx ad 8 mm. longus dense pilosulus in lobos lineari-oblongos acutos ad duas partes vel ultro partitus. Corollae fere 2 cm. longae extra albido-pilosulae tubus limbo paulo longior basi cylindricus supra ampliatus ; limbi in sicco rubridi labium posticum 7–8 mm. longum breviter bifidum, anticum ad medium in lobos oblongos trifidum. Stamina 2 filamentis supra glabris prope insertionem albo-villosulis, antherarum loculis inferioribus albo-calcaratis. Ovarium glabrum.

"China :—N.W. Yunnan ; by streams in arid region of Yangtze. Alt. 10,000 ft. Straggling shrub, spreading a good deal. Stems 1–2 ft. high. May 1913." F. K. Ward. No. 301.

Loranthus scoriarum, W. W. Sm. Sp. nov.

Species ex affinitate *L. coccinei,* Jack a quo foliis lanceolatis apice basique attenuatis inter alia recognoscitur.

Frutex circ. 1 m. altus. Ramuli primo tenuiter ferrugineo-

puberuli mox glabrescentes. Folia opposita vel subopposita rarius alterna petiolo circ. 5 mm. longo furfuraceo-puberulo suffulta ; lamina 5–10 cm. longa, 1.5–4 cm. lata, lanceolata vel ovato-lanceolata vel rarius oblanceolata, apice acuta vel acuminata, basi in petiolum sensim cuneata, in sicco papyracea, adulta utrinque glabra vel fere glabra (juvenilia utrinque ferrugineo-furfuracea subtus densissime), costa subtus prominula, nervis 4–5-paribus subobscuris. Inflorescentiae axillares circ. 3 cm. longae spiciformes 10–12-florae ; rhachis erectiuscula ferrugineo-furfuracea tandem glabrescens ; pedicelli nulli ; bracteae solitariae circ. 1 mm. longae late ovatae obtusae ferrugineo-tomentellae. Calyx subquadrato-globosus circ. 2 mm. longus lobis vix evolutis extra dense ferrugineo-tomentellus. Corolla circ. 1 cm. longa recta tetramera, extra furfuracea, rubido-aurantiaca, segmentis oblongis patentibus. Stylus 1 cm. longus gracilis glaber stigmate capitato coronatus.

" China :—Outskirts of lava bed west of Tengyueh, Yunnan. Lat. 25° N. Alt. 5000 ft. Shrub of 2–4 ft. Flowers reddish-orange. Parasite on many large trees. May 1912." G. Forrest. No. 7689.

In a note Mr. Forrest says that the plant was brought in by natives. The locality is correct, but he cannot vouch for the accuracy of all the statements on the ticket. The species is closely akin to *L. coccineus*, Jack, a Burmese and Malayan species.

Lysionotus Forrestii, W. W. Sm. Sp. nov.

Species affinis *L. ophiorrhizoidei*, Hemsl. ex descriptione esse videtur ; inter species chinenses et burmanicas foliis in sicco tenuiter membranaceis, petiolis plus minusve hirsutulis, pedicellis longissimis gracillimis 1–2-floris, inter alia recognoscitur.

Fruticulus 60–75 cm. altus erectus ramosus, ramis flexuosis gracilibus primo dense fulvo-hirsutulis tandem glabrescentibus, senioribus cinerascentibus et decorticantibus. Folia ternata vel opposita, petiolo 1–2 cm. longo plus minusve dense fulvo-hirsutulo praedita ; lamina plerumque 6–8 cm. longa, 2.5–3.5 cm. lata, ovato-lanceolata vel subelliptica, apice acuta vel acuminata, basi plus minusve late cuneata, margine integra vel remote et irregulariter serrata, tenuiter membranacea, supra opaco-viridis, infra olivacea, utrinque glabra, costa nervisque pagina inferiore distinctis. Inflorescentiae in axillis foliorum superiorum ortae 1–2-florae ; pedunculi 3–4 cm. longi, gracillimi, flexuosi, glabri vel ad basim sparsim hirsutuli ; bracteae 2–3 mm. longae, lineari-oblongae, glabrae ; pedicelli 5–10 mm. longi, glabri. Flores circ. 3.5 cm. longi rosei et lutei. Sepala circ. 1 cm. longa, lineari-lanceolata, subfalcata, basi vix connata. Corollae bilabiatae tubus circ. 2.5 cm. longus cylindricus supra

paulo ampliatus glaber ; lobi rotundati. Stamina perfecta duo inclusa. Stigma vix bilobum ; ovarium glabrum. Fructus maturus deest.

" West China :—Western flank of the Shweli-Salween divide, Yunnan. Lat. 25° 20′ N. Alt. 9000 ft. Undershrub of 2–2½ ft. Flowers rose and yellow. Open shady situations. Aug. 1912." G. Forrest. No. 9084.

Lysionotus gracilis, W. W. Sm. Sp. nov.

Species affinis *L. Wardii,* W. W. Sm. infra descriptae, a qua foliis acuminatis, bracteis linearibus, calycis segmentis linearibus inter alia distinguitur.

Fruticulus 15–30 cm. altus erectus vel suberectus, super arborum truncos saxaque errans. Caulis gracilis basi saepe radicans undique plus minusve brunneo- vel fulvido-hirsutulus. Folia ternata vel opposita, petiolo 3–8 mm. longo pilis articulatis hirsutulo suffulta ; lamina 2–6 cm. longa, 1–1.5 cm. lata, plerumque anguste lanceolata, apice longiuscule acuminata, basi cuneata, margine plus minusve grossi-dentata, coriacea, opaco-viridis, supra glabra nisi ad apicem saepe sparsim pilosum, infra glabra nisi ad basim costae, costa utrinque paulo prominula, nervis 5–6 paribus in sicco obscuris. Inflorescentiae in axillis foliorum superiorum ortae, in speciminibus nostris 1–2-florae ; pedunculi 3–4.5 cm. longi, gracillimi, flexuosi, sparsim pilosi vel saepe glabrescentes ; bracteae bracteolaeque 2–3 mm. longae, lineari-oblongae, glabrae ; pedicelli ad 5 mm. longi, glabri. Flores fere 3 cm. longi, albi striis venisque roseo-purpureis. Sepala basi paululo connata, 8–9 mm. longa, lineari-oblonga, glabra. Corollae bilabiatae angustae tubus circ. 1.8 cm. longus basi cylindricus glaber vel subglaber ; lobi rotundati intus furfuraceo-pubescentes. Stamina perfecta duo inclusa. Stylus stamina fere aequans stigmate obscure bilobo. Ovarium lineare sparsim furfuraceum. Fructus deest.

" Upper Burma :—Valley of Naung-chaung. Alt. 6000–7000 ft. In forest or open but sheltered places. Undershrub on moss-clad tree trunks and rocks. Flowers white, striped and veined with pinkish purple. August 1914." F. K. Ward. No. 1894.

Lysionotus Wardii, W. W. Sm. Sp. nov.

Species affinis *L. serratae,* D. Don sed multo minor ; caulibus et petiolis et paginis foliorum inferioribus plus minusve dense hirsutulis inter alia recedit.

Suffrutex circ. 20 cm. altus erectus vel suberectus, super arborum truncos saxaque errans. Caulis gracilis, basi radicans,

undique plus minusque fulvo- vel rufido-hirsutulus. Folia ternata vel opposita, petiolo 2–3 mm. longo dense hirsutulo suffulta ; lamina 2.5–4.5 cm. longa, 7–10 mm. lata, anguste lanceolata vel elliptico-lanceolata, apice acuta vel obtusiuscula, basi cuneata vel subrotundata, margine integra vel obscure crenato-serrata, coriacea, opaco-viridis, supra glabra, infra plus minusve dense fulvo-hirsutula, costa media infra eminente, nervis in sicco subobscuris. Inflorescentiae in axillis foliorum superiorum ortae, in specimine nostro biflorae ; pedunculi ad 7.5 cm. longi, gracillimi, flexuosi, infra hirsutuli, supra glabri vel mox glabrescentes ; bracteae circ. 2.5 mm. longae, ovatae, glabrescentes ; pedicelli 7–8 mm. longi, glabri. Flores circ. 4 cm. longi, violacei. Sepala 3 mm. longa, 1.5 mm. lata, elliptica, apice indurato-apiculata, fere glabra. Corollae bilabiatae angustae tubus circ. 2.5 cm. longus, basi cylindricus pilis articulatis albidis dense indutus, supra paulo ampliatus glabrescens ; lobi rotundati. Stamina perfecta duo, staminodia 2, inclusa. Stigma breviter bilobum. Fructus deest.

" Upper Burma :—Valley of Naung-chaung. Alt. 6000–7000 ft. In forest or open but sheltered places. Undershrub on moss-clad tree trunks and rocks. Flowers violet. August 1914." F. K. Ward. No. 1895.

154 **Peristrophe yunnanensis,** W. W. Sm. Sp. nov.

Species affinis *P. speciosae,* Nees a qua bracteis valde diversis, floribus dimidio minoribus inter alia recedit ; quoad bracteas species haec potius ad *P. bicalyculatam,* Nees spectat.

Planta 1–2 m. alta habitu *P. speciosae,* Nees. Caules sulcati flexuosi graciles substraminei glabri, juveniles minutissime cinereo-pubescentes. Folia (superiora minora tantum visa) 2.5–3 cm. longa, circ. 1 cm. lata, lanceolata vel ovata, petiolo 1–3 mm. longo minutissime pubescente praedita, apice longiuscule acuminata, basi plerumque cuneata, integra, in sicco tenuiter membranacea, supra sparsim puberula (ad costam densius) ultimum glabrescentia, infra ad costam nervosque primo dense pubescentia. Inflorescentia ampla cymis laxe paniculatis ; cymulae ultimae bracteis 3 mm. longis linearibus basi praeditae ; bracteae florales plerumque 4, lineari-lanceolatae, acutissimae, 6–7 mm. longae, extra dense cinereo-pubescentes, margine plus minusve scariosae ; bracteolae 2 bracteis subsimiles 5–6 mm. longae ; flores in quoque capitulo bractearum plerumque solitarii. Calyx 5–6 mm. longus fere ad imum in lobos 5 lineares acutos fissus glaber vel subglaber. Corolla circ. 1.8 cm. longa roseo-lavendulacea extra minute pubescens. Stamina 2 filamentis supra glabris infra pube-

scentibus, antheris recurvis, polline typico. Stylus gracillimus. Semina matura desunt.

"China :—Yangpi Valley, Yunnan. Lat. 25° 40′ N. Alt. 5000 ft. Shrub of 3–6 ft. Flowers rose-lavender. Shady open situations. April 1914." G. Forrest. No. 12,279.

533 **Phacellaria ferruginea,** W. W. Sm. Sp. nov.

Species valde affinis *Phacellariae Wattii,* Hook. f. a qua ramulis inflorescentiisque ferrugineo-tomentellis divergit.

Frutex parasiticus aphyllus ramosus caulibus aggregatis 15–30 cm. longis infra sparsim puberulis, supra ad regionem inflorescentiarum et ad ramulos juveniles dense ferrugineo-tomentelli. Flores minuti aggregati in foveolas inserti sessiles; aggregationes cuique ramulo ad 12 ferrugineo-tomentellae; perianthium floris masculini 5-merum 1 mm. diametro paulo superans, extra tenuiter tomentellum lobis deltoideis. Fructus anguste ovoideus circ. 5 mm. longus, lobis perianthii 5–6 deltoideis coronatus.

"China :—Tali Range, Yunnan. Lat. 25° 40′ N. Alt. 9000–10,000 ft. Parasitic shrub of 6–12 inches. In mixed forests. Sept. 1913." G. Forrest. No. 11,585.

"Neighbourhood of Teng-yueh, Yunnan; growing on *Loranthus.*" E. B. Howell. No. 325.

252 **Phytolacca clavigera,** W. W. Sm. Sp. nov.

Species affinis *Ph. polyandrae,* Batal. mihi non visae et *Ph. americanae,* Linn.; pedicellis flores aequantibus, tepalis ovatis circ. 4 mm. longis, staminibus 12, fructibus racemum densissimum claviformem formantibus inter alia bene notata.

Suffrutex ramosus 1–1.5 m. altus ramis suberectis robustis herbaceis glabris viridibus tandem purpurascentibus. Folia petiolo 1.5–2.5 cm. longo robusto vix canaliculato glabro suffulta; lamina plerumque ± 15 cm. longa, ± 8 cm. lata, ovato-elliptica vel ovato-lanceolata, apice acuta mucronato-glandulosa, basi cuneata in petiolum decurrens, margine paulo undulata, zona marginali pellucida angustissima praedita, membranacea, supra glabra, ad costam minute pulverulenta, infra glabra nisi ad costam nervosque minute scabridulos, punctulis albidis dense praedita, costa nervisque subtus prominentibus. Inflorescentiae foliis breviores, erectae dense racemosae pedunculis ± 3 cm. longis validis minute et scabridule puberulis suffultae; pedicelli circ. 4 mm. longi in fructu ad 7 mm. aucti, minute scabriduli, bracteis bracteolisque linearibus praediti; perianthii segmenta ovata, circ. 4 mm. longa, circ. 3 mm. lata, apice rotundata, per anthesin alba, tandem purpurascentia; stamina

12 perianthium fere aequantia filamentis basi complanatis; ovarium 8-carpellatum, carpellis omnino connatis, stylis fere rectis ovaria subaequantibus. Fructus baccatus valde depressus circ. 9–10 mm. diametro niger; inflorescentia fructifera ad 15 cm. longa, circ. 4 cm. lata, fructibus in massam spiciformem coarctatis.

China :—Province of Yunnan. Cultivated in the Royal Botanic Garden, Edinburgh, from seeds collected by George Forrest. At present the plant is 3–4 ft high, and has flowered and fruited freely. The ripe inflorescence is very striking, the black fruits being packed into a dense club-shaped mass suggesting the ripe inflorescence of *Arisaema* and other Aroids. Forrest, No. 96, from the Kari Pass, Yunnan, previously ascribed to *Phytolacca acinosa*, Roxb., is perhaps the same, but the specimens are somewhat incomplete.

590 **Rhynchanthus Beesianus,** W. W. Sm. Sp. nov.

Species chinensis affinis *Rh. longifloro*, Hook. f. a quo spica circ. 12-flora, bracteis laete scarlatinis, corolla laete flava inter alia divergit.

Planta in scheda circ. 50 cm. alta, ex collectore saepe 60–90 cm., erecta, basi tuberoso-incrassata radicibus crassis tomentosis. Folia 8–10, disticha, superiora bene evoluta, inferiora ad vaginas reducta; foliorum superiorum lamina plerumque 15–18 cm. longa, 5–7 cm. lata, oblongo-lanceolata, apice longe acuminata, basi rotundata vel late cuneata, membranacea, utrinque glabra, petiolo brevissimo atque vagina praelonga caulem arcte amplectante purpureo-striata auriculis brevibus rotundatis praedita; folia inferiora vaginiformia tenuiter membranacea margine brunneo-scariosa, medio purpureo-striata. Spica terminalis erecta circ. 12-flora breviter pedunculata; flores circ. 9 cm. longi. Bractea circ. 5 cm. longa, fere 1 cm. lata, lineari-lanceolata, acuta, tenuiter membranacea, laete scarlatina; bracteola subsimilis sed multo minor 1.5 cm. vix excedens. Calyx circ. 3 cm. longus, tubulosus, supra unilateraliter fissus, apice plerumque acuminibus duobus ornatus, scarlatinus. Corolla 5–6 cm. longa, laete flava; tubus elongatus supra dilatatus; lobi circ. 1.5 cm. longi, ovato-lanceolati, acuminati; labellum obsoletum. Filamentum longe exsertum, cymbiforme, flavum; anthera circ. 8 mm. longa. Ovarium circ. 5 mm. longum glabrum triloculare multiovulatum glandulis duabus oblongis coronatum; stylus gracillimus stigmate infundibuliformi ultra antheram paululo exserto.

"China :—Province of Yunnan; on lava bed west of Tengyueh. Lat. 25° N. Alt. 5000 ft. Plant of 2–3 ft. Perianth bright canary yellow, bracts bright scarlet. Open

shady situations amongst scrub and grass. June 1912." G. Forrest. No. 8108.

This is an interesting extension into China of this rare genus. Two species were previously known, both believed to come from Burma. Their exact habitats are unknown. The present plant is much the finest of the three. The flowers of this genus show great reduction in the size of the labellum and the absence of staminodes.

4455 **Strobilanthes arenicolus,** W. W. Sm. Sp. nov.

Species affinis *S. isophyllo,* T. Anders. a quo sepalis dense glanduloso-pilosis, corolla longiore, staminibus supra glabris, stylo glabro, capsula plus minusve pilosula differt.

Fruticulus 30–45 cm. altus basi decumbens supra ascendens vel suberectus; caulis inferior simplex cinerascens defoliatus umbricolus, superior ramosus quadrangulus satis bene foliatus primo minute puberulus mox glabrescens. Folia petiolo 1–3 mm. longo mox glabro praedita; lamina 3–5 cm. longa, 5–9 mm. lata, lineari-lanceolata, apice acuta vel subacuminata, basi cuneata, margine subremote serrulata, in sicco papyracea, supra atroviridis glabra crebro lineolata, infra pallidior primo sparsim pilosula cito glabrescens nervis circ. 5 paribus. Inflorescentiae ut in *S. isophyllo*; flores 1–3-nati, in axillis quasi brevi-pedunculati vel ramulos longiusculos terminantes foliis reductis ramulorum caducis; bracteae lineari-oblongae circ. 4 mm. longae glabrae caducae; bracteolae similes breviores. Calyx circ. 8 mm. longus glanduloso-hirsutus in lobos 5 linearioblongos acutiusculos fere ad basim partitus. Corolla 3–3.5 cm. longa, violacea, parte cylindrica partem ventricosam fere aequante, extra primo minute puberula cito subglabra, intus sparsim albo-villosa; lobi breves rotundati. Stamina 4, filamentis supra glabris basi sparsim pilosulis. Ovarium pilosulum; stylus glaber; fructus circ. 1 cm. longus sparsim pilosulus.

"Upper Burma :—Bed of Malihka, Insop. Alt. 600–1000 ft. Small shrubby plant of 1–1½ ft., decumbent, in dry sand, under the shrub growth on slaty rock, in shade of shrubs and bushes. Flowers rich violet. December 1914." F. Kingdon Ward. No. 2000.

"Kachin Hills, north of Myitkyina, on road to Kanpti Long via Malihka branch." S. Toppin. No. 4108.

4456 **Strobilanthes Austini,** Clarke Mss. in Herb. Kew descr. W.W. Sm.

Species ex affinitate *S. Hancocki,* Clarke a quo petiolis longioribus, bracteis diversis, spicis laxioribus paucifloris inter alia recedit.

Planta circ. 30 cm. longa suberecta basi plus minusve decumbens caulibus flexuosis gracilibus crispato-pilosulis tarde glabrescentibus. Folia aequalia vel subaequalia petiolo 1.5–2 cm. longo dense fulvido-pilosulo praedita ; lamina 6–7 cm. longa, 3–4 cm. lata, elliptica vel ovata vel obovata, apice subacuta vel acuta vel breviter acuminata, basi late cuneata vel etiam subrotundata, margine serrulata, in sicco papyracea, utrinque lineolata, supra atroviridis glabra vel sparsim setosula, infra glabra vel ad costam pilosula vel hic illic setosula ; nervi 4–6 paria. Inflorescentiae plerumque terminales 2–4 cm. longae spiciformes ; in axillis superioribus additi flores sessiles solitarii ; ad basim spicae apparent folia reducta oblonga vel caulinis subsimilia ; bracteae circ. 1.5 cm. longae oblongae vel oblongo-spathulatae foliaceae deciduae lineolatae margine ciliatae vel pilosulae. Calyx 8–10 mm. longus in lobos 5 linearioblongos acutos margine ciliatos fere ad imum fissus. Corolla circ. 4 cm. longa paulo curvata purpurea ; tubus usque ad medium cylindricus supra sensim ampliatus extra pilosulus ; lobi rotundati 5–6 mm. diametro. Stamina perfecta 4 filamentis albo-pilosulis, polline typico. Fructus deest.

" China :—Mengtze, Yunnan. Woods in shade at 4500 ft. 1–1½ ft. With purple flowers." Henry. No. 9159A in Herb. Kew.

" Mi-lê, Yunnan ; mountain forest. Purple flowers." Henry. No. 9956 in Herb. Kew.

" Yuanchay, Yunnan. 5000 ft. Purplish flowers." Henry. No. 13,382 in Herb. Kew.

Strobilanthes claviculatus, Clarke Mss. in Herb. Kew. descr. W. W. Sm.

4457

Species affinis *S. alato*, Nees et *S. extenso*, Nees ob inflorescentiam esse videtur sed fortasse in *Alternifloras*, Clarke prope *S. rubescentem*, T. Anders. melius posita.

Planta 70 cm. alta vel ultra erecta ramosa caulibus gracillimis flexuosis glabris. Folia aequalia vel valde inaequalia, suprema sessilia, inferiora et mediana plerumque petiolo 5–10 mm. longo anguste alato minute puberulo suffulta ; nonnunquam unum (majus) petiolatum, alterum sessile ; lamina ad 7 cm. longa, ad 2 cm. lata, ovato-lanceolata vel lanceolata, apice acuminata, basi cuneata, margine remotiuscule serratula, in sicco membranacea, utrinque lineolata, supra setulis minimis conspersa ceterum glabra, infra glabra vel subglabra ; nervi utrinque circ. 5 ; folia sessilia cordata vel cordato-ovata. Inflorescentiae terminales et axillares 1–3-florae rhachi ad 5 cm. longa dense glanduloso-hirsutula praeditae ; bracteae cito deciduae ; flores sessiles sub fructu remoti. Calyx ad 2 cm.

longus glanduloso-hirsutus in lobos 5 lineari-oblongos apice spathulatos ad imum fissus. Corolla fere 4 cm. longa leviter curvata pallido-purpurea (?); tubus basi cylindricus, mox subventricoso-ampliatus glaber; lobi rotundati circ. 5 mm. diametro. Stamina perfecta 4 filamentis glabris, polline typico. Fructus calycem aequans clavato-oblongus apice villosulus seminibus 4 sericeis circ. 3 mm. diametro.

"China:—Mi-lê district, Yunnan; in mountain wood. Purple flowers." Henry. No. 10,319 in Herb. Kew.

Strobilanthes Cyclus, Clarke Mss. in Herb. Kew. descr. W. W. Sm.

Species ex affinitate *S. yunnanensis*, Diels a quo foliorum forma atque inflorescentiis subverticillatis inter alia differt.

Planta circ. 40 cm. alta; radix crassa; caules plures erecti vel suberecti saepe flexuosi pilis longis articulatis fulvidis vel albidis plus minusve dense induti. Folia aequalia petiolo 2–5 mm. longo dense piloso praedita; lamina 2.5–5.5 cm. longa, 2–4.5 cm. lata, late ovata vel rhomboidea vel fere orbiculata, apice rotundata vel obtusa, basi late cuneata vel subrotundata, margine crenata nonnunquam obscure, in sicco papyracea, supra opaco-viridis subdense setoso-pilosa minute lineolata, infra pallidior praesertim ad costam nervosque (4–5 paria) setoso-pilosa. Inflorescentiae terminales et axillares sub-capitatae vel breviter spiciformes quasi-verticillatim dispositae, basi foliis reductis bene cinctae et suboccultae; flores ex collectore coerulei; bracteae bracteolaeque lineari-oblongae circ. 8–10 mm. longae pilosae. Calyx circ. 7 mm. longus in lobos lineari-oblongos pilosos ad imum fissus. Corolla 2 cm. paulo superans fere recta; tubus basi breviter cylindricus, mox (sed sensim) ampliatus, extra glaber nisi prope lobos; corolla inaperta fronte longiuscule albo-pilosula; lobi subrotundati circ. 5 mm. diametro dorso albo-pilosi. Stamina perfecta 4 filamentis glabris polline typico. Ovarium apice pilosulum. Fructus circ. 7 mm. longus pilis apice persistentibus.

"China:—Yunnan; Mengtsz, grassy mountain at 7000 ft. Growing in clumps. Blue flowers." Henry. No. 10,159 in Herb. Kew. et Herb. Edin.

Vicinity of Yunnan-sen. Maire. Nos. 730, 1878 in Herb. Edin.

Strobilanthes fimbriatus, Nees var. **majusculus,** W. W. Sm.

Var. nov.

A typo foliis duplo majoribus circ. 12-nerviis subtus vix vel obscure lineolatis ad costam nervosque sparsim puberulis, corolla ad 5 cm. longa differt.

"Upper Burma :—Kachin Hills, north of Myitkyina, on road to Kanpti Long via Malihka branch." Toppin. Nos. 4183, 4244.

This is so near the Khasian plant that I have not given it more than varietal rank.

4459 **Strobilanthes Hancocki,** Clarke Mss. in Herb. Kew. descr. W. W. Sm.

Species ex affinitate *S. pentstemonoidis,* T. Anders. a quo foliis chartaceis, inflorescentiis strobiliformibus inter alia recedit.

Planta 30–40 cm. alta erecta caulibus flexuosis gracilibus teretibus glabris vel cito glabrescentibus. Folia superiora sessilia vel fere sessilia, mediana petiolo 3–5 mm. longo sparsim pilosulo suffulta ; lamina plerumque 6–9 cm. longa, 2–4 cm. lata, ovata vel ovato-lanceolata, apice acuminata, basi plus minusve late cuneata, margine crenato-serrata, in sicco chartacea, utrinque lineolata, supra atroviridis ad costam marginesque pilosula ceterum glabra, infra pallidior glabra ; nervi 5–7 paria. Inflorescentiae ramulos terminantes strobiliformes ; aggregatio bractearum circ. 4 cm. longa ; bracteae circ. 1.5 cm. longae, ellipticae vel ovatae, sub anthesin plus minusve persistentes, lineolatae, subglabrae. Calyx ad 1.5 cm. longus in lobos 5 lineari-oblongos acutos lineolatos ad margines sparsim pilosulos fere ad imum fissus. Corolla 4–5 cm. longa, plus minusve curvata, purpurea ; tubus basi cylindricus, supra sensim ampliatus extra glaber, intus hic illic prope fauces longiuscule albo-villosus ; lobi rotundati 5–6 mm. diametro. Stamina perfecta 4 filamentis albo-villosulis polline typico. Fructus immaturus apice albo-villosulus.

"China :—Mengtsz mountains, Yunnan. Rocky places. Flowers blue. Sept. 1893." Hancock. No. 104 in Herb. Kew.

"Mengtsz, grass mountains. 6000 ft. Purple flowers." Henry. No. 10,027 in Herb. Kew. et Edin.

"Mengtsz, south mountains. 3000 ft. Purple flowers." Henry. No. 10,027A in Herb. Edin.

4460 **Strobilanthes hupehensis,** W. W. Sm. Sp. nov.

Species affinis *S. pentstemonoidei,* T. Anders. a quo foliis vix glabris, bracteis longe ante anthesin delapsis, calyce pilis longis patentibus paleaceis glanduloso-capitatis dense obsito inter alia divergit.

Planta 40–60 cm. alta ut videtur, erecta, caulibus flexuosis gracilibus angulatis glabris. Folia petiolo circ. 1 cm. longo glabro lineolato suffulta ; lamina 9–14 cm. longa, 2.5–4 cm.

lata, lanceolata vel elliptico-lanceolata, apice longe (saepe praelonge) acuminata, basi cuneata, margine argute atque subregulariter serrata, in sicco membranacea, supra atroviridis setulis paleaceis nitentibus hic illic conspersa ceterum glabra minute lineolata, infra pallidior glabra obscure vel vix lineolata; nervi 5–8 paria. Inflorescentiae in axillis superioribus orientes pedunculis gracilibus ad 5 cm. longis glabris simplicibus vel pauciramosis folia reducta pauca gerentibus suffultae; flores capitati plerumque 3–5-nati; bracteae ante anthesin deciduae non visae. Calyx 5–8 mm. longus setulis patentibus paleacis nitentibus glanduloso-capitatis dense indutus in lobos 5 inaequales lineari-oblongos obtusiusculos fere ad imum fissus. Corolla circ. 3 cm. longa, fere recta, ut videtur pallido-purpurea, extra sparsim pilosula, intus glabra nisi ad fauces sparsim albovillosulas; tubus infra cylindricus, supra sensim ampliatus, lobis brevibus rotundatis. Stamina perfecta 4 filamentis glabris. Ovarium pilosulum. Fructus 1 cm. longus vel ultra, quoad formam ei *S. pentstemonoidis* subsimilis.

"China:—West Hupeh. July 1901. Wilson. No. 2627."

This appears to be the Hupeh representative of the widespread and variable *S. pentstemonoides*, T. And. It is not conspecific with the plant collected in Nepal by Wallich. Central China sheets such as Henry, Nos. 2074 and 3052, are referable to *S. hupehensis*.

Strobilanthes hygrophiloides, Clarke Mss. in Herb. Kew. descr. W. W. Sm.

Species affinis *S. fimbriatae*, Nees; foliis utrinque setulis conspersis, floribus in axillis superioribus quasi-verticillatis bene notata.

Planta erecta caulibus flexuosis dense albido- vel fulvido-hirsutis tarde glabrescentibus; altitudo non nota; rami in scheda circ. 30 cm. longi. Folia petiolo 1–2 cm. longo plus minusve alato hirsuto praedita; lamina plerumque 5–7 cm. longa, 2.5–3.5 cm. lata, nonnunquam ad 10 cm. longa, ad 5 cm. lata, elliptica vel ovata vel ovato-lanceolata, apice acuminata, basi late vel anguste cuneata, margine obscure et irregulariter serratula, tantum in foliis maximis serrata, in sicco chartacea, utrinque lineolata, supra atroviridis setulis conspersa, ad costam saepe densius, infra pallidior densiuscule setosula; nervi 5–7 paria. Inflorescentiae in axillis superioribus orientes; flores 1–3-nati, quasi-verticillati; pedunculi pedicellique nulli; bracteae bracteolaeque lineari-oblongae calycem aequantes vel paulo superantes plus minusve hirsutae. Calyx circ. 1.5 cm. longus pilis articulatis hirsutulus in lobos 5 lineari-lanceolatos acutos fere ad imum fissus. Corolla 3.5–4 cm. longa, fere recta,

pallido-purpurea (?); tubus basi cylindricus mox et subito ventricoso-ampliatus, extra sparsim pilosulus, intus apud fauces hic illic albo-villosulus; lobi rotundati 7–8 mm. diametro. Stamina perfecta 4 filamentis albo-villosulis polline typico. Ovarium albo-villosulum seminibus 4; stylus pilosulus.

"China :—Ta-tsien-lou (Principauté de Kiala), Thibet Oriental. Anno 1893. Soulié. No. 591 in Herb. Kew."

Between Batang and Tachienlu. Sept.–Oct. 1904. Consul General Hosie sine num. in Herb. Kew.

Strobilanthes Lamium, Clarke Mss. in Herb. Kew. descr. W. W. Sm.

Species affinis *S. versicolori,* Diels et *S. yunnanensi,* Diels; ab illo habitu humiliore, caulibus simplicibus, foliorum forma, inflorescentiis congestis, filamentis glabris inter alia recedit; ab hoc caulibus simplicibus herbaceis, foliis glabrioribus magis incisis recognoscitur.

Planta ad 45 cm. alta suberecta basi saepe plus minusve decumbens; caules flexuosi supra pilis paleaceis saepe glanduloso-capitatis albidis dense induti, infra glabrescentes. Folia infra remota supra approximata, aequalia, petiolo circ. 1 cm. longo glanduloso-hirsuto tandem glabrescente suffulta; lamina plerumque 4–5 cm. longa, 2.5–3 cm. lata, ovata vel ovato-lanceolata, apice acuta vel acuminata, basi late cuneata, margine (pro magnitudine grosse) serrata, in sicco papyracea, utrinque lineolata, supra atroviridis, sparsim setosula ad costam fulvido-pilosula, subtus multo pallidior ubique subsparsim pilosula vel setosula; nervi circ. 5 paria; folia suprema fere subsessilia congesta saepe lanceolata basim inflorescentiae amplectantia et suboccludentia. Inflorescentiae terminales breviter spiciformes 4–8-florae; flores subsessiles purpurei; bracteae circ. 16 mm. longae, oblongae vel oblanceolatae (cum bracteolis circ. 12 mm. longis lineari-oblongis), pilis glanduloso-capitatis indutae. Calyx circ. 1.1 cm. longus in lobos lineares 5 lineari-oblongos glanduloso-pilosos ad imum fissus. Corolla circ. 3.5 cm. longa fere recta extra sparsim glanduloso-pilosula; tubus basi cylindricus mox sensim ampliatus; lobi rotundati circ. 6 mm. diametro. Stamina perfecta 4 (Clarke teste nonnunquam 3) filamentis dense pilosulis polline typico. Ovarium apice pilosulum; fructus maturus deest.

"China :—W. Hupeh near Chienshi. Flowers purple. July 1900." Wilson. No. 1300 in Herb. Kew. et Herb. Edin.

4463

Strobilanthes mekongensis, W. W. Sm. Sp. nov.

Species affinis *S. yunnanensi,* Diels a quo foliis longe petiolatis tenuiter membranaceis, calycis segmentis longe et

molliter albo-villosis inter alia divergit ; in sectionem *Alterniflorarum*, Clarke ponenda.

Frutex 2–2.5 m. altus erectus ramosus ramis junioribus plus minusve albido-pilosulis, senioribus glabris pallido-cinerascentibus. Folia petiolo 2–4 cm. longo albido-pilosulo suffulta ; lamina 6–9 cm. longa, 2.5–4.5 cm. lata, ovato-lanceolata vel ovata vel subelliptica, apice longiuscule acuminata, basi cuneata in petiolum decurrens, margine remotiuscule serrata vel undulata vel subintegra, ciliolata, in sicco tenuiter membranacea, supra atroviridis pilis paleaceis hic illic conspersa subdense lineolata, infra multo pallidior ad nervos (4–5 paria) sparsim paleaceo-pilosula lineolata. Flores remoti ex axillis superioribus orientes, duo oppositi sed saepius unus evolutus alter vestigialis ; pedunculus circ. 4 mm. longus albido-pilosulus (saepe brevissimus fere obsoletus), apice bracteolam circ. 2 cm. longam lineari-oblongam vel lineari-oblanceolatam ceterum foliis subsimilem gerens. Calyx 1.5–2 cm. longus in lobos 5 lineari-oblongos acutos dense albo-villosos praesertim ad margines ad basim partitus. Corolla 4–5 cm. longa, fere recta, basi cylindrica, supra anguste tubulosa sensim ampliata ad os (circ. 2 cm. latum in sicco complanatum), extra subdense albo-villosula, flavido-alba, roseo-suffusa, lobis rotundatis circ. 6 mm. diametro. Stamina 4 ; filamenta longiora plus minusve albo-villosa ; pollen generis. Ovarium dense albo-villosum breviter stipitatum ; stylus sparsim albo-villosulus. Fructus immaturus seminibus 4.

" China :—Mekong Valley, Yunnan. Lat. 27° 40′ N. Alt. 6000 ft. Open rocky situations. Shrub of 6–8 ft. Flowers yellowish-white flushed rose. July 1914." G. Forrest. No. 12,882.

464 **Strobilanthes oresbius,** W. W. Sm. Sp. nov.

Species affinis *S. inflato*, T. Anders. a quo foliis majoribus latissimis subglabris margine grossidentatis inter alia facile recognoscitur.

Fruticulus caules annuos erectos circ. 1 m. altos quadrangulos glabros vel glabrescentes emittens. Folia petiolo 2–8 cm. longo supra alato glabro suffulta ; lamina foliorum superiorum ad 17 cm. longa, ad 11 cm. lata, ovata, apice longiuscule acuminata, basi cuneata in petiolum decurrens, margine grosse serrata, in sicco membranacea, supra opaco-viridis, glabra nisi ad costam obscure puberulam, sparsim lineolata, infra glabra brunneo-olivacea, nervis utrinque circ. 10 subconspicuis. Inflorescentiae in axillis superioribus ortae spiciformes tortuosae 6–12-florae pilis glanduloso-capitatis dense obsitae pedunculo circ. 2.5 cm. longo suffultae ; flores 1–2-nati, sessiles vel subsessiles ; bracteae

5–6 mm. longae lineari-oblongae vel anguste spathulatae plus minusve glanduloso-pilosae. Calyx 12–13 mm. longus pilis glanduloso-capitatis dense obsitus in lobos lineari-oblongos fere ad basim partitus. Corolla ad 4 cm. longa medio magnopere curvata, extra albo-pilosa (tandem sparsim), pallido-purpurea; tubo circ. 3.5 cm. longo, parte infima 5 mm. longa cylindrica, parte mediana valde ventricosa circ. 1.5 cm. longa et lata, parte suprema circ. 1.5 cm. longa supra ampliata, lobis brevibus orbicularibus. Stamina 4 ad curvaturam medianam attingentia. Stylus minute puberulus vel glabrescens. Ovarium glabrum.

"Upper Burma:—Mountains above Laking-hka, 11,000–12,000 ft., valley of Naw-chaung. In open meadows by streams or undergrowth by streams. Perennial undershrub sending up annual stems of 3–4 ft. Flowers palest purple, almost mauve. August 1914." F. Kingdon Ward. No. 1911.

4165 **Strobilanthes pinetorum,** W. W. Sm. Sp. nov.

Species ex affinitate *S. rubescentis*, T. Anders.; foliis inferioribus serratis longe petiolatis (petiolis alatis) superioribus sessilibus, duobus supremis quasi-involucrantibus flore primo plus minusve incluso longioribus inter alia bene notata.

Fruticulus ad 1 m. altus erectus ramosus bene foliatus glaber vel cito glabrescens. Folia mediana et inferiora petiolo 1–3 cm. longo alato glabro suffulta; lamina ad 9.5 cm. longa, ad 5 cm. lata, ovata, apice plerumque caudato-acuminata, basi subrotundata vel late cuneata in petiolum subabrupte decurrens, margine regulariter et mediocriter serrata, in sicco membranacea, supra atroviridis primo sparsim pilosula mox glabra, infra olivacea glabra, utrinque lineolata, nervis 5–6 paribus; superiora sessilia basi rotundata subcordata, ceterum inferioribus similia. Flores remoti subspiciformiter dispositi ramulos terminantes; par supremum foliorum caulinorum plerumque ramulos tres (duos axillares) vel ramulos duos floremque solitarium sessilem includit; hi ramuli folia multo reducta sessilia gerunt et ad ultimum cum ramulis secundariis suis flore solitario sunt terminati; bracteae 5–7 mm. longae oppositae ovatae basim floris cingentes. Calyx circ. 1 cm. longus glaber lineolatus in lobos 5 lineari-oblongos obtusiusculos fere ad basim partitus. Corolla circ. 4 cm. longa valde curvata extra glabra pallido-purpurea, parte ventricosa partem cylindricam duplo superante, lobis brevibus rotundatis. (Flos bene evolutus in scheda nostra unicus quare genitalia indescripta manent.)

"China:—Hills to the south of Teng-yueh, Yunnan. Lat. 25° N. Alt. 6000 ft. Shady situation in pine forests. Half-shrubby plant of 2–3 ft. Flowers light bluish-purple. June 1912." G. Forrest. No. 8385.

Strobilanthes polyneuros, Clarke Mss. in Herb. Kew. descr. W. W. Sm.

Species distinctissima ex affinitate *S. fimbriatae,* Nees ; foliis magnis multi-nervatis inter alia bene notata.

Planta ad 1.8 m. alta ; caulis (pars minima visa) lignescens crassus. Folia superiora tantum visa sessilia vel petiolo brevissimo crasso praedita ; lamina 13–30 cm. longa, 5–11 cm. lata, elliptica vel late lanceolata, apice longiuscule acuminata, basi cuneata, margine subregulariter serrulata, in sicco papyracea, utrinque lineolata atque glabra, supra atroviridis infra brunneo-olivacea ; nervi 12–20 paria utrinque plus minusve conspicui subparalleli. Flores in spicas axillares congestas brevi-pedunculatas bene bracteatas circ. 4 cm. longas dispositi ; pedunculus circ. 1 cm. longus ; bracteae steriles circ. 1 cm. longae foliaceae ovatae basim spicae amplectentes ; bracteae fertiles et bracteolae 2–2.4 cm. longae basi lanceolatae supra longissime subulato-acuminatae apice ipso saepe inflexae minute fulvido-pilosulae. Calyx circ. 17 mm. longus in lobos 5 lineares apice longe subulatos fissus. Corolla circ. 4 cm. longa fere recta purpurea ; tubus basi cylindricus mox sensim ampliatus extra glaber intus sparsim puberulus, lobis rotundatis circ. 6 mm. diametro. Stamina perfecta 4 filamentis hirsutulis. Ovarium apice villosulum stylo dense patenti-villoso. Fructus deest.

" China :—Mengtsz, Yunnan ; south mountains. Alt. 5000 ft. Shrub 6 ft. Purplish flowers." Henry. No. 10,352 in Herb. Kew.

Strobilanthes psilostachys, Clarke Mss. in Herb. Kew. descr. W. W. Sm.

Species ex affinitate *S. pentstemonoidis,* T. Anders. a quo caulibus petiolisque hirsutulis, foliis inaequalibus, inter alia recognoscitur.

Planta 25–60 cm. alta erecta vel basi decumbens caulibus tortuosis vel flexuosis gracilibus plus minusve dense fulvido-hirsutulis. Folia petiolo 3–10 mm. longo fulvido-hirsutulo praedita ; paria valde inaequalia ; lamina majorum 6–9 cm. longa, 2.5–3.5 cm. lata, ovata vel elliptico-ovata vel lanceolata, apice caudato-acuminata, basi plus minusve late cuneata, margine irregulariter serrata, in sicco chartacea, utrinque lineolata, supra setulis paleaceis paucis conspersa, utrinque ad costam nervosque minute fulvido-pilosula, nervis 5–6 paribus ; folia minora 1–2 cm. longa. Inflorescentiae terminales et in axillis superioribus orientes, pedunculis circ. 2.5 cm. longis hirsutulis suffultae ; flores capitati, plerumque 3-nati ; bracteae cymbiformes lineolatae cito deciduae. Calyx 5–8 mm. longus

dense glanduloso-hirsutus in lobos 5 inaequales lineari-oblongos obtusos fere ad imum fissus. Corolla ad 4 cm. longa fere recta pallido-purpurea ; tubus basi cylindricus supra sensim ampliatus extra glaber, intus nisi ad unum locum apud fauces villosulum glaber ; lobi rotundati 5–6 mm. diametro. Stamina perfecta 4 filamentis glabris, polline typico. Fructus ad 1 cm. longus oblongo-clavatus glanduloso-pilosulus.

"China :—Szemao forests, Yunnan. 4500 ft. Flowers pale purple." Henry. No. 12,914 in Herb. Kew. and Herb. Edin.

4467

Strobilanthes rufo-hirtus, Clarke Mss. in Herb. Kew. descr. W. W. Sm.

Species affinis *S. yunnanensi,* Diels ; pilis rufis caules petiolos folia bracteas ornantibus bene notata.

Planta in scheda 20–30 cm. longa erecta gracilis ; forsan ad 1 m. alta ; caules supra pilis rufis longis articulatis bene praediti infra glabrescentes. Folia petiolo 1.5–2.5 cm. longo dense rufo-hirto suffulta ; lamina 8–9 cm. longa, 3.5–4 cm. lata, ovata vel ovato-lanceolata, apice acuminata, basi late cuneata vel subrotundata, margine crenata rufo-ciliata, in sicco membranacea, supra atroviridis setulis rufidis articulatis conspersa, infra setulis iisdem paulo densius praedita ; nervi circ. 5 paria. Inflorescentiae terminales 2–3-florae una cum bracteis lineari-spathulatis dense rufo-hirtae ; pedunculus pedicellique obsoleti. Calyx 12–13 mm. longus rufo-hirtus in lobos lineari-spathulatos fere ad imum fissus. Corolla 4–5 cm. longa ; tubus infra cylindricus supra sensim ampliatus, parte cylindrica partem alteram subaequante, extus minute puberulus, intus hic illic albo-villosulus ; lobi rotundati circ. 6–7 mm. diametro. Stamina perfecta 4, filamentis albo-villosis polline typico. Fructus deest.

"China :—Mengtsz ; S.E. mountain forests. 5000 ft. ["Shrub 3 ft., with pink flowers" ?]" Henry. No. 11,133 in Herb. Kew.

I have seen only one sheet of this very distinct *Strobilanthes.* The material is scanty, but the species is readily recognised by the abundance of rufous articulated hairs. The height and colour noted on the ticket are within inverted commas and perhaps on authority of native collector.

4469

Strobilanthes scoriarum, W. W. Sm. Sp. nov.

Species ex affinitate *S. rhombifolii,* Clarke et *S. dasyspermi,* Kurz ; foliis superioribus sessilibus basi rotundatis glabris, calycibus epilosis eglandulosis inter alia bene notata.

Planta 60–75 cm. alta erecta ramosa caulibus subquadratis sparsim pilosulis glabrescentibus. Folia superiora tantum visa sessilia vel subsessilia ; lamina 10–15 cm. longa 4–6.5 cm. lata,

lanceolata vel ovato-lanceolata, apice longe acuminata, basi plus minusve rotundata vel late obtusa, margine regulariter serratula, in sicco membranacea, supra atroviridis crebre lineolata glabra, infra ad costam nervosque lineolata glabra ; nervi 5–6 paria. Inflorescentiae amplae anguste paniculatae ad 25 cm. longae ; rhachis cum ramis ramulisque plus minusve pilosula ; pedicelli subobsoleti ; bracteae plerumque 5–10 mm. longae, foliaceae, ellipticae vel ovatae, obtusae, utrinque lineolatae, sub anthesi plus minusve persistentes. Calyx circ. 1 cm. longus epilosus eglandulosus utrinque lineolatus in lobos 5 lineari-lanceolatos acutos fere ad imum divisus. Corolla ad 3.5 cm. longa fere recta extra glabra saturate kermesino-purpurea, intus glabra (nisi ad unum locum apud fauces albo-villosum) ; tubus infra cylindricus supra subito ampliatus, parte ventricosa paulo longiore, lobis rotundatis circ. 6 mm. diametro. Stamina 4 filamentis glabris ; pollen typicum. Ovarium fere glabrum apice tantum sparsim pilosulum stylo glabro. Fructus deest.

" China :—Lava bed west of Tengyueh, Yunnan. Lat. 25° N. Alt. 5000 ft. Open situations. Plant of 2–2½ ft. Flowers deep crimson-purple. August 1912." G. Forrest. No. 8862.

This species is very closely allied to *S. rhombifolius*, Clarke, an Assam plant with which has been identified by Clarke a Yunnan sheet collected by Henry under No. 11,183 at Feng Chen Lin. The Henryan plant differs from *S. scoriarum* in its very glandular calyx, but is otherwise very like. I doubt its identity with the Assam *S. rhombifolius*.

Strobilanthes stramineus, W. W. Sm. Sp. nov.

Species affinis *S. pentstemonoidei*, T. Anders. a quo foliis chartaceis sessilibus rotundatis, floribus stramineis, staminibus brevioribus ad staminodia reductis inter alia recedit.

Planta suffruticosa caulibus elongatis decumbentibus flexuosis saepe supra frutices errantibus glabris vel cito glabrescentibus. Folia superiora tantum visa sessilia ; lamina 8–11 cm. longa, 5–6.5 cm. lata, late ovata, apice acuta vel breviter acuminata, basi rotundata, margine crebro et regulariter serrulata, in sicco chartacea, atroviridis, utrinque lineolata glabra, nervis 6-7 paribus. Inflorescentiae pedunculis praelongis 12–18 cm. longis saepe in ramulos tres divisis glabris vel ad apicem sparsim pilosulis suffultae ; bracteae mox deciduae mihi non visae ; flores plerumque 5–9-aggregati subcapitati sub fructu remotiusculi. Calyx circ. 1.2 cm. longus in lobos 5 lineari-lanceolatos minute et dense pilosulos fere ad imum partitus. Corolla circ. 3 cm. longa valde curvata extra glabra straminea purpureo-lineata, intus glabra nisi ad unum locum apud fauces albo-villosum, infra cylindrica, supra subito ventricoso-ampliata, lobis brevibus

rotundatis. Stamina perfecta duo filamentis glabris ; staminodia duo. Ovarium minute albo-pilosulum. Fructus 1 cm. longus, oblongo-clavatus seminibus 4 ovalibus circ. 2 mm. longis sericeis.

"Upper Burma :—Forty miles south of Putao. 2000 ft. alt. Suffruticose herb, weak stems several feet in length, more or less decumbent and supported amongst the thick jungle growth on the edge of the jungle. Flowers straw-coloured, upper lip with purple guide streaks. December 1914." F. Kingdon Ward. No. 1986.

Strobilanthes Wardii, W. W. Sm. Sp. nov.

Species affinis *S. consorti,* Clarke a quo foliis et indumento et corollae forma differt.

Fruticulus ad 1.5 m. altus ; caules flexuosi pilis articulatis fulvidis vel albidis plus minusve dense induti. Folia subaequalia vel valde inaequalia, majora petiolo 2.5–4.5 cm. longo dense articulato-piloso suffulta ; lamina majorum plerumque 6–10 cm. longa, 4–6.5 cm. lata, ovata vel elliptico-ovata vel subelliptica, apice caudato-acuminata, basi plus minusve rotundata vel late cuneata, margine serrata, in sicco membranacea, supra atro-viridis lineolata ad costam fulvido-pilosula ceterum sparsim setosula, infra pallidior ubique plus minusve albido-setoso-pilosa ; nervi 4–5 paria. Inflorescentiae floribus 2–6 compositae ramulos saepe tortuosos terminantes subcapitatae vel brevi-spiciformes congestae pilis longis albido-paleaceis dense indutae ; flores ipsi sessiles saturate purpurei ; bracteae 5–15 mm. longae ovatae acuminatae foliaceae. Calyx circ. 1 cm. longus in lobos 5 linearioblongos dense paleaceo-pilosos apice tantum virides obtusiusculos fere ad imum fissus. Corolla 2.5–3 cm. longa valde curvata extra pilosula intus glabra ; tubus basi breviter cylindricus supra ventricoso-ampliatus ; lobi rotundati circ. 5 mm. diametro. Stamina perfecta 4 filamentis glabris. Ovarium glabrum. Fructus deest.

"Upper Burma :—Valley of Naw-chaung. Small shrub or bush of 3–5 ft. Flowers borne on new shoots each year. Amongst thick undergrowth in rather open parts of tree (not bamboo) forest. 9000–10,000 ft. Flowers richest purple. Aug. 1914." F. Kingdon Ward. No. 1912.

Tanacetum elegantulum, W. W. Sm. Sp. nov.

Species affinis *T. adenantho,* Diels a quo foliis pulchre dissectis utrinque argenteis, inflorescentiis laxioribus, capitulis incanis divergit.

Planta 25–50 cm. alta e caudice parvo lignoso oriens ; caules numerosi basi simplices graciles erecti vel suberecti tomento

tenui incano-argenteo induti, supra in regione inflorescentiae corymboso-ramosi. Folia caulina circ. 2 cm. longa, circ. 1.5 cm. lata, tenuiter tripinnatisecta, segmentis ultimis 2–3 mm. longis linearibus, utrinque incano-tomentella; folia superiora minus dissecta, suprema simplicia linearia ad 1 cm. longa. Inflorescentiae corymbosae diffusae pedunculis ultimis ad 1 cm. longis incanis; capitula vix matura 3–4 mm. diametro; involucri phylla exteriora 2–3 mm. longa linearia vel lanceolata incano-tomentella, interiora lanceolata vel elliptica extus plus minusve tomentella intus stramineo-scariosa. Flores vix maturi.

"China :—Mekong-Salween divide, Yunnan. Lat. 28° 10′ N. Alt. 10,000 ft. Strongly aromatic shrubby plant of 9–20 inches. Flowers immature. Open stony pasture and on edges of cliffs. Sept. 1914." G. Forrest. No. 13,335.

"On the Tong Shan in the Yangtze bend, Yunnan. Lat. 27° 20′ N. Alt. 10,000 ft. Aromatic shrubby plant of 12–20 inches. Flowers immature, probably yellow or brown. Open stony pasture. Sept. 1913." G. Forrest. No. 11,341.

This *Tanacetum* comes from the same area as *T. adenanthum*, Diels, and is closely allied to it.

Tanacetum glabriusculum, W. W. Sm. Sp. nov.

Species ex affinitate *T. Pallasiani*, Trautv. et Mey. a quo foliis aliter sectis glabriusculis, corymbis contractis, capitulis pallidis recedit.

Planta ad 75 cm. alta e caudice lignoso oriens, infra pauciramosa; caulis sat robustus erectus primo tomento albido tenui indutus tandem glabrescens. Folia caulina membranacea, plerumque 8–12 cm. longa, 2–5 cm. lata, ambitu obovata, in petiolum 2–3 cm. longum vix discretum alatum attenuata, bipinnatisecta, segmentis primariis plerumque 5 anguste obovatis cum rhachi alata conjunctis in segmenta secundaria 5–10 mm. longa 2–5 mm. lata lanceolata vel linearia apiculata 3–5-fidis, supra viridia glabra, infra pallidiora sparsim pilosa. Inflorescentiae corymbosae contractae 3–4 cm. diametro; pedunculi ultimi circ. 5 mm. longi tomento incano induti; capitula 6–7 mm. diametro; involucri phylla exteriora 2–3 mm. longa linearia vel elliptica extra plus minusve incana, interiora 3–4 mm. longa elliptica vel obovata, fere ex toto stramineo-scariosa, glabra vel fere glabra; flores numerosi circ. 3 mm. longi pallido-luteo-brunnei; achaenia matura desunt.

"China :—Yunnan; mountains in the N.E. of the Yangtze bend. Lat. 27° 45′ N. Alt. 10,000 ft. Shrubby plant of 2–2½ ft. Flowers light-yellowish brown. Open stony pasture on the margins of pine forests. Sept. 1913." G. Forrest. No. 11,302.

"Yunnan, Mekong-Yangtze divide. Lat. 27° 40′ N. Alt.

10,000 ft. Aromatic plant of 9–12 inches. Flowers white. Open stony pasture. Aug. 1914." G. Forrest. No. 13,418.

The latter specimen is dwarf but appears to be the same species.

Tanacetum oresbium, W. W. Sm. Sp. nov.

Species ex affinitate *T. myrianthi,* Franch. a quo habitu gracillimo, foliis minoribus in segmenta ultima minima divisis, corymbis gracillimis pauci-capitulatis, capitulis ipsis minoribus inter alia recedit.

Planta 30–60 cm. alta e caudice lignoso oriens, prope basim multiramosa; caules graciles erecti vel suberecti, ramulis multis gracillimis 4–10 cm. longis praediti, tomento albido tenui plus minusve induti. Folia caulina numerosa 5–15 mm. longa, breviter petiolata, bipinnatisecta in segmenta ultima 1–3 mm. longa linearia acutiuscula, supra viridia incano-pilosa, infra pilis densis incanis plus minusve argentea. Inflorescentiae corymbosae similes eis *T. fruticulosi,* Ledeb. et *T. gracilis,* Hook. f. et Thoms.; pedunculi ultimi 2–3 mm. longi; capitula circ. 2.5 mm. diametro; involucri phylla exteriora circ. 1 mm. longa lineari-lanceolata incano-tomentella, interiora circ. 2 mm. longa, elliptica, stramineo-scariosa, glabra vel fere glabra; achaenia matura desunt.

"China :—Yunnan, on the Bei Ma Shan. Lat. 28° 20′ N. Alt. 12,000 ft. Strongly aromatic plant of 1–2 ft. Flowers dull golden yellow. Open situations amongst rocks. Oct. 1914." G. Forrest. No. 13,417.

This has the appearance of a very slender *T. myrianthum,* Franch. It bears a close resemblance in habit, leaves, and inflorescence to West Himalayan species, such as *T. fruticulosum,* Ledeb. and *T. gracile,* Hook. f. et Thoms.

ADDENDUM.

My thanks are due to the Director of Kew for the loan of Chinese material of *Strobilanthes.* These sheets had already been examined by the late C. B. Clarke, who affixed manuscript names to several of the species. These names I have adopted and have given descriptions. Some of these species are not represented in the Edinburgh Herbarium, and my further thanks are due for permission to include descriptions of these in the above series. I am thus enabled to publish the new species

of *Strobilanthes* together. The type-specimens of the following species, marked by an asterisk in the list on pages 167–168, are in the Kew Herbarium, and are unrepresented in the Edinburgh Herbarium :—

Strobilanthes Austini, Clarke Mss.
S. claviculatus, Clarke Mss.
S. hygrophiloides, Clarke Mss.
S. polyneuros, Clarke Mss.
S. rufo-hirtus, Clarke Mss.

W. W. S.

Primulae Novitates Nonnullae.

BY

WILLIAM GRANT CRAIB, M.A.

THE descriptions included are :—

Primula aequalis, Craib, p. 205.
,, erythrocarpa, Craib, p. 206.
,, orestora, Craib et Cooper, p. 207.
,, paucifolia, Watt MSS., p. 208.
,, platycrana, Craib, p. 209.

Primula (§ Denticulata) aequalis, *Craib*, a speciebus aliis himalaicis huius gregis calyce corollae subaequialto facile distinguenda.

Rhizoma breve, satis crassum, radices elongatas crassas numerosas emittens ; squamae sub anthesin persistentes, exteriores oblatae, interiores plus minusve oblongae, omnes inferne integrae, planae, superne dentatae, margine revolutae, summo apice breviter acuminatae. Folia sub anthesin oblongo-oblanceolata vel oblongo-obovata, petiolo incluso ad 6.5 cm. longa et 1.5 cm. lata, infructescentia oblongo-oblanceolata, ad 12 cm. longa et 2.8 cm. lata, apice rotundata vel obtusa, costa in hydathodum excurrente apiculata, basi in petiolum alatum basi vaginantem vix distinctum attenuata, sicco chartacea, pagina utraque pilis brevibus capitatis farinipotentibus subsparse instructa, pagina superiore marginem versus et inferiore ad costam nervosque et margine pilis longioribus transverse septatis instructa, nervis lateralibus utrinque circa 16 supra conspicuis subtus prominentibus saepissime rectis inferioribus patulis vel subpatulis superioribus erecto-patentibus bene intra marginem furcatis ramulis in dentes excurrentibus, margine denticulata, dentibus omnibus hydathodo apiculatis. Scapi saepissime solitarii, rarius gemini, inflorescentes 9–12 cm., infructescentes ad 15 cm. alti, superne puberuli et plerumque tenuiter farinosi ; bracteae involucrales lineari-lanceolatae, obtusae vel subacutae, basi gibbosae, calycis tubum superantes, plerumque circa 8 mm. longae, virides vel apicem versus purpurascentes, ut calycis lobi ciliatae, dorso puberulae. Calyx 8–9 mm. longus ; lobi oblongi vel oblongo-lanceolati, obtusi vel subobtusi, 6.5–7 mm. longi,

2 mm. lati, facie utraque cum tubo extra et superne intra pilis capitatis farinipotentibus sparse instructi, pilis capitatis transverse septatis longiusculis ciliati. Corollae tubus 7.5 vel 9.5 mm. longus, extra superne pilis capitatis sparse instructus, exannulatus, supra stamina rugulosus, lobi obcordati, 5.5–6 mm. longi, 4.5–5.5 mm. lati, lobulis apice rotundatis 3 mm. longis 2.25 mm. latis. Antherae 1.75 mm. longae, loculis basi liberis et breviter apiculatis, in flore longistylo e calycis tubo parum exsertae, in flore brevistylo in calyce inclusae, filamentis vix 0.5 mm. longis, 0.5 mm. supra antherarum bases insertis. Stylus cum stigmate in flore longistylo 4.5 mm. longus, calyce brevior, in flore brevistylo 2 mm. longus, in stigma subglobosum apice truncatum gradatim expansus; ovarium 1.5 mm. altum, apice complanatum.

Sikkim :—Phallut, 11,000 ft., flr. 29.vi.14, fr. 29.vii.14, Cave (Hb. Edin.); ibid., 12,000 ft., flr. 28.v.11, Smith, 4595 (Hb. Edin.); ibid., 12,000 ft., flr. 31.v.02, Lace, 2263 (Hb. Calc.); ibid., 12,000 ft., flr. vi.88, King's Collector; Faheloungma, 12,000 ft., flr. 25.v.81, Watt, 5202 (Hbb. Edin., Kew.); Singaleelah, 11,000 ft., flr. 13.vi.92, Gammie, 73 (Hb. Calc.); Jongri, King's Collector (Hb. Calc.); Sikkim, loco haud indicato, 11,000 ft., Tanner (Hb. Calc.) et King's Collector (Hb. Calc.).

Primula (§ Denticulata) erythrocarpa, *Craib*, species foliorum indumento, scapo purpurascente distinguenda.

Folia oblongo-spatulata vel oblongo-elliptica, apice rotundata, costa excurrente breviter apiculata, basi in petiolum plus minusve distinctum alatum attenuata, sub anthesin saepius 5–6 cm. longa et 2 cm. lata, autumnalia ad 12 cm. longa et 5 cm. lata, pagina superiore viridia, pilis breviusculis transverse septatis sparse instructa, inferiore pallidiora, ad costam nervosque pilis longiusculis rectis transverse pluri-septatis tecta, praetereaque pilis brevibus farinipotentibus capitatis luteoviridibus sparse ornata, nervis lateralibus in foliis autumnalibus circa 20 rectis vel subrectis angulo circa 75° e costa ortis bene intra marginem ramosis ramulis in dentes excurrentibus supra parum impressis subtus prominentibus, nervulis subtus prominulis, margine ciliata, denticulata, dentibus hydathodo apiculatis; petioli basi vaginantes, 1–1.5 cm. longi. Scapi rarius solitarii, ad 35 cm. alti, praesertim superne purpurascentes, sparsim albo-farinosi; bracteae involucrales variabiles, lanceolatae vel late lanceolatae, acutiusculae vel obtusae, basi saepe subito ampliatae, ima basi gibbosae, 3–5 mm. longae, sparsim albo-farinosae. Calyx 5.5 mm. longus, viridis vel lobis apice purpurascentibus, sparse albo-farinosus; lobi oblongo-lanceolati, obtusi, 4 mm. longi, 1–1.25 mm. lati, utrinque pilis brevibus

farinipotentibus et margine pilis longiusculis transverse pluriseptatis capitatis instructi. Corollae tubus 7.5–9 mm. longus, superne extra pilis farinipotentibus instructus, exannulatus, intra supra stamina rugulosus, lobi oblongo-cuneati, 7.5 mm. longi, 6.5 mm. lati, lobulis apice rotundatis, sinu basi acuto, disco circa 1 mm. lato. Antherae 1.75 mm. longae, loculis basi liberis breviter apiculatis, in flore longistylo in calyce omnino inclusae, in brevistylo omnino exsertae, filamentis 0.5 mm. longis 0.5 mm. supra antherarum bases affixis. Ovarium globosum vel ovoideo-globosum, apice complanatum, 1.5 mm. altum; stylus stigmate pyriforme apice truncato concavo incluso in flore longistylo 4.5 mm. longus, calyce parum longior, in flore brevistylo 2 mm. longus, calyce brevior. Capsula saltem apice cito plerumque rubescens.

Cult. Hort. Bot. Reg. Edin. e seminibus bhutanicis. R. E. Cooper. 3828.

Primula (§ Denticulata) orestora, *Craib* et *Cooper,* species nova *P. caucasicam,* C. Koch, simulans, sed ab illa longe distans, foliorum indumento, floribus sessilibus, calyce haud pergamentaceo inter notas alias valde distincta.

Herba rosulata, pygmaea, rhizomate parvo per annos 2–3 persistente foliorum praeteritorum vestigiis siccis obtecto radices albidas plurimas emittente, foliis floribusque coaetaneis. Rosula hornotina plana, squamis vaginalibus paucis longe ovatis vel oblongis integris in folia adulta pedatim transeuntibus cincta. Folia petiolata, ad 2.2 cm. longa, spatulata vel oblongo-spatulata; lamina 1.2–1.5 cm. longa, 8–12 mm. lata, elliptica vel elliptico-oblonga, apice rotundata, costa in hydathodum excurrente mucronata, margine revoluta, mox plana, argute regulariter vel subregulariter serrato-denticulata, denticulis hydathodo terminatis, basi cuneatim in petiolum circa 1 cm. longum ad 3 mm. latum costa mediana conspicua et ala membranacea praeditum attenuata, cum petiolo utrinque pilis brevibus glandulis farini-potentibus copiose vestita, supra convexa, pallide viridia, efarinosa, subtus concava dense albido-farinosa. Scapus 3–9 cm. altus, superne dense albo-farinosus, flores sessiles erectos paucos (ad 9) in inflorescentiam capituliformem dispositos gerens; bracteae extimae erectae vel adscendentes, a basi lanceolatae, acutae, circa 5 mm. longae, 2 mm. latae, virides, apice nunc atropurpureae, utrinque reticulato-venulosae, venatione elevata, glandulis farini-potentibus utrinque vestitae, intra albo-farinosae, extra sparse farinosae, basi extus pulvinatim incrassatae; pedicelli nulli. Calyx anguste campanulatus vel campanulatus, mox basi inflatus, circa 6 mm. longus, extus glandulis farini-potentibus obtectus,

viridis, ultra medium 5-fissus, tubo 5-nervio intus glabro, lobis lineari-lanceolatis acutis 3–5-nerviis intus dense albo-farinosis apice atropurpureis. Corollae tubus flavido-albidus, cylindricus, supra stamina ampliatus, in flore brevistylo circa 11 mm. longus, in flore longistylo circa 9 mm. longus, extus plus minusve farinosus, intus transverse rugosus, fauce exannulatus; limbi plani discus vix 1 mm. latus, lobi obovati, circa 4 mm. longi, bifidi, segmentis subdivaricatis. Stamina floris brevistyli infra medium tubi corollini ultra calycem inserta, floris longistyli prope basem tubi corollini supra ovarium inserta in calycis tubo inclusa, filamentis brevissimis, antheris angustis circa 1.5 mm. longis. Ovarium parvum circa 1 mm. longum, vertice stylopodio conspicuo coronatum; stylus tenuis, brevis vix 1.5 mm. longus, tubo calycis brevior, longus circa 3.5 mm. longus lobis calycinis dimidio brevior; stigma ovoideum, minutum.

Bhutan :—Ghassu Pass. Alt. 13,000 ft. Flower blue, in open peaty turf on hillside. R. E. Cooper. 3837. 3rd May 1915.

Thibet :—Hill behind Tangu Bungalow. Alt. 15,500–16,000 ft. Younghusband. T. 65. 5th July 1903. Herb. Calc.

Phari Plain and the Upper Chumbi Valley on the way to Phari. Walsh. 13 et 138. End of May 1904. Herb. Calc.

The abundant material—unfortunately none in fruit—of this plant sent by Mr. R. E. Cooper has enabled me to make sure of the identification of the several specimens collected during the Thibetan Frontier Expedition which are cited above. The Thibetan specimens in the Calcutta herbarium are excellent but few in number, and I hesitated about dissecting any of them, but Cooper's specimens, which are without doubt the same plant, make this unnecessary. The Thibetan plants are labelled *P. farinosa* var. *caucasica*, Regel.

Primula (§ Denticulata) paucifolia, *Watt* Mss., a speciebus aliis foliis paucioribus, calcye pro corollae longitudinem elongato cognoscenda.

Radices numerosae, crassae; squamae sub anthesin rarius omnino delapsae, exteriores breves lataeque, brunneae, rigidae, interiores longiores, tenuiores, pallide stramineae, intimae folia simulantes, ad 3.5 cm. longae et 0.7 cm. latae, omnes apice denticulatae et haud rarius dorso sulphureo-farinosae. Folia oblanceolata, spatulato-oblanceolata vel interdum oblongo-oblanceolata, apice obtusa rotundatave, basi in petiolum attenuata, usque ad 11 cm. longa et 2.2 cm. lata, chartaceo-membranacea, pagina utraque pilis brevibus capitatis farini-potentibus praetereaque interdum pilis longioribus transverse septatis praesertim pagina superiore marginem versus et inferiore ad costam

nervosque laterales instructa, margine pilis brevibus vel satis longis capitatis ciliata, nervis lateralibus utrinque numerosis primo patentibus mox satis obliquis pagina utraque conspicuis intra marginem ramosis ramulis in hydathados excurrentibus; petioli conspicue alati, basi vaginantes, 1.5–4 cm. longi. Scapi solitarii, 6–20 cm. alti, pilis brevibus farini-potentibus plus minusve puberuli, apice sulphureo-farinosi; bracteae involucrales quoad longitudinem variabiles, interdum calyce distincte breviores, interdum calycem aequantes; flores dense aggregati, breviter pedicellati. Calyx circa 7 mm. longus, lobis circa 0.75 mm. latis apicem versus attenuatis margine ciliolatis, tubo circa 2 mm. longo. Corollae tubus floris longistyli calyce paululo longior, floris brevistyli calyce saltem dimidio longior, intra haud rugulosus, exannulatus; limbi lobi 4 mm. longi, 2.5 mm. lati, vix ad medium bifidi. Stamina in flore longistylo in calyce omnino inclusa, in flore brevistylo omnino exserta, in corollae tubo bene inclusa; antherae vix 2 mm. longae, filamentis circa 0.5 mm. longis 0.5 mm. supra antherarum bases affixis suffultae. Ovarium 1.5 mm. altum, stylo longo stigmate vix 1 mm. longo incluso 4.5 mm. longo. Capsula calycis tubo subaequialta vel eo paululo longior.

P. denticulata, Sm., var. *paucifolia*, Hook. f., Fl. Brit. Ind., iii, p. 486; Pax in Engler Bot. Jahrb., x, p. 193; id. in Engler Pflanzenr. Primul., p. 91.

Kashmir:—Poosiana. 8000–9000 ft. C. B. Clarke. 28,809, 28,816. Flr. et fr. 6 July 1876.

Primula (§ Denticulata) platycrana, *Craib*, species nova ab affinioribus inflorescentia apice plana bene distincta.

Folia oblanceolata vel oblongo-oblanceolata, inferne in petiolum basi late vaginantem attenuata, ad 12 cm. longa et 3.5 cm. lata, coriacea, pagina utraque primo bullata, superiore demum multo minus bullata, pilis brevibus vel longiusculis septatis glanduloso-capitatis persistentibus supra marginem versus tantum infra omnino tecta, efarinosa, infra pallidiora, costa inferne ampliata, nervis lateralibus utrinque 16–20 rectis angulum circa 45° cum costa efficientibus furcatis supra parum impressis infra valde prominentibus, margine recurvo angustius subregulariter denticulata, petiolo rubescente 1.5–2 cm. longo primo recto mox apice recurvo suffulta. Scapus 40 cm. altus, circa 3 mm. diametro, praesertim superne farina pallida albida tectus; involucri bracteae exteriores circa 7, acuminatae vel caudato-acuminatae, summo apice obtusae, 5–7 mm. longae, basi 5 mm. latae, utrinque farinosae. Calyx sub anthesin 7 mm. longus, lobis 5 mm. longis, infructescens 8 mm. longus, utrinque farinosus, lobis 5 mm. longis margine involutis. Corolla lilacina,

luteo-oculata; tubus 9 mm. longus, exannulatus, supra stamina rugulosus; limbus 16 mm. diametro, oculo 4–5 mm. diametro, lobis 5 mm. longis interdum bilobatis interdum varie dentatis. Antherae 0.5 mm. longae, breviter apiculatae, in flore longistylo circa 3 mm. supra corollae tubi basem sitae, in calyce inclusae. Stylus fere 6 mm. longus, corollae tubi apicem vix attingens. Capsula calycis tubo parum longior.

Cult. Hort. Bot. Reg. Edin. e seminibus bhutanicis a Cooper (No. 2367) lectis. Floruit iv.17.

Gesneracearum Novitates Nonnullae.

BY

WILLIAM GRANT CRAIB, M.A.

THE descriptions included are :—

Chlamydoboea connata, Craib, p. 211.
Perantha, Craib, gen. nov., p. 212.
Perantha minor, Craib, p. 213.
Perantha Forrestii, Craib, p. 213.
Perantha cordatula, Craib, p. 214.
Petrocosmea Henryi, Craib, p. 216.
Tremacron, Craib, gen. nov., p. 217.
Tremacron Forrestii, Craib, p. 217.
Tremacron Mairei, Craib, p. 218.

Chlamydoboea connata, *Craib*, a *C. sinense*, Stapf, calycis segmentis multo latioribus, tribus posticis in labium trilobum alte connatis facile distinguenda.

Caulis erectus, 8 cm. altus, 5–6 mm. diametro, superne tantum foliatus, dense cinnamomeo - pannoso - arachnoideus. Folia ovato-oblonga, ad 19 cm. longa et 9.5 cm. lata, subcoriacea, indumento ei *C. sinensis* simili tecta, nervis lateralibus utrinque circa 13 pagina superiore parum impressis inferiore cum costa valde prominentibus, nervulis paucis subtus prominentibus, petiolo 7 cm. longo basi vaginante infra rotundato supra medio canaliculato latere utroque sulci elevato suffulta. Pedunculus communis 6 cm. longus, apice bracteis duabus 1 cm. longis connatis ornatus; pedunculi partiales 1 cm. longi, indumento caulis et pedunculi communis obtecti. Calyx extra tenuiter lanatus, intra pilis brevibus latius capitatis sparse tectus, bilabiatus, labio antico e segmentis duobus basi brevissime connatis ellipticis vel elliptico-spatulatis apice rotundatis inferne angustatis e basi trinerviis nervo intramarginali minus conspicuo interdum addito 10–12 mm. longis 5 mm. latis constituto, sepalo postico cum sepalis lateralibus in labium 3-lobum 12 mm. longum et 17 mm. latum connato, lobis subquadratis apice subtruncatis 6 mm. longis 7 mm. latis, et lobis et segmentis margine undulatis vel undulato-denticulatis viridibus vel saepissme superne purpurascentibus. Corolla 1.8 cm. longa, tubo 1.3 cm. longo, lobis duobus posticis rectis oblatis

8 mm. latis, tribus anticis arcte reflexis posticis subsimilibus, tubo et lobis inferne extra lanatis. Stamina generis. Discus vix conspicuus. Pistillum 1 cm. altum, ovario lineari sulcato glabro in stylum pilis parvis glandulosis furfuraceum gradatim attenuato, stigmate pallido plano obliquo.

Cult. e seminibus a G. Forrest in Yunnan vel Burma superiore lectis.

To Mr. G. Forrest we are indebted for the introduction of this genus to cultivation. From seed collected by him Mr. Williams, Caerhays Castle, Cornwall, raised plants, one of which he communicated to the Royal Botanic Garden, Edinburgh. Comparison with co-types of *C. sinensis* showed that it differed in several respects from that species, and above brief description has been drawn up from the fresh plant with the primary object of embodying the chief diagnostic features.

Perantha, *Craib*, gen. nov., ab *Oreocharide* corolla postice basi saccato-gibbosa haud campanulata, a *Didissandra* antheris inter se omnino liberis recedit.

Calyx in segmenta 5 inter se subaequalia partitus, persistens. Corollae tubus elongatus, subcylindricus, postice basi saccato-gibbosus et medio parum inflatus, antice paulo supra medium parum inflatus, infra limbum parum constrictus vel saltem angustatus; limbus e labiis duobus inter se subaequilongis divergentibus sed vix patulis constitutus; labium posticum 2-lobatum, anticum 3-fidum. Stamina per paria approximata sed inter se omnino libera, antica lateralia paululo superantia, antheris ad labii antici basem sitis in corollae tubo omnino inclusis vel anticarum apicibus tantum e corollae tubo exsertis, loculis subparallelis, connectivo glabro, filamentis teretibus infra corollae tubi medium affixis. Discus conspicuus, cylindricus, glaber, 5-lobulatus, vel subintiger. Pistillum corollae tubo subaequialtum, superum, stylo distincto, stigmate bilobulato ad labii postici basem sito; ovarium sessile vel subsessile. Capsula elongata, stylo persistente saepe apiculata, valvis rectis.—Herbae nanae, perennes, foliis omnibus basalibus rosulatim dispositis penninerviis indumento denso saepissime cinnamomeo saepe mox agglutinato subtus tectis margine crenatis vel crenato-lobulatis, pedunculis uni- vel pauci-floris pilis glanduloso-capitatis instructis, floribus mediocribus luteis.

Species tres yunnanenses quae inter se ita distinguendae :—

Et foliorum pagina superior et pistillum glabrum . *P. minor*
Foliorum pagina superior haud glabra.
Pistillum glabrum; folia basi cuneata, apice obtusa rotundatave . . . . . *P. Forrestii*
Pistillum glanduloso-pubescens; folia basi cordatula, superne angustata . . . . *P. cordatula*

Perantha minor, *Craib.*

Rhizoma rectum, circa 5 mm. crassum, radices numerosas satis crassas emittens, apice foliola anni praeteriti vel eorum petiolos tantum saepe gerens. Folia quoad formam variabilia, saepissime lanceolata, oblonga ovatave, apice acuta vel rotundata, basi cuneata vel cordatula, usque ad 2.8 cm. longa et 1.7 cm. lata, coriacea, supra viridia, marginem tantum versus pilis brevibus albis crassis instructa, subtus densissime cinnamomeo-lanata, indumento in laminam albam membranoideam mox agglutinato, nervis lateralibus omnino obscuris, costa supra saepe impressa subtus interdum prominente, margine irregulariter crenulato-lobulata; petioli rarius ad 4 cm. longi, saepius 2–3 cm. longi, indumento ei foliorum paginae inferioris simili tecti. Pedunculi communes 2–6, ad 8 cm. longi, saepissime fusco-rubri vel superne purpurascentes, pilis transverse septatis glanduloso-capitatis apicem versus densius tecti; bracteae minutae; flores pauci, lutei, pedicellis circa 8–10 mm. longis indumento ei pedunculi simili instructis suffulti. Calyx fusco-ruber vel purpurascens, in segmenta 5 inter se subaequalia oblonga apice rotundata 2–2.5 mm. longa 1 mm. lata vel paululo latiora dorso margineque pilis longiusculis glanduloso-capitatis sparsius instructa 3-nervia nervis intramarginalibus in nervum medianum sub apice summo arcuatim currentibus partitus. Corolla circa 1.9 cm. longa, extra glanduloso-pubescens; tubus 11 mm. longus, intra apice pilis paucis glanduloso-capitatis instructus; labium posticum 6–7.5 mm. longum, 5–6 mm. latum, fere ad medium bilobatum, intra inferne glanduloso-pubescens; anticum in segmenta 3 oblonga vel oblongo-oblanceolata circa 5.5 mm. longa et 2.25–3 mm. lata, intra sparse glanduloso-pubescentia partitum. Antherae anticae corollae tubum vix aequantes vel paululo exsertae, lateralium apicibus anticarum bases attingentibus, ambitu ovatae vel ellipticae, 1–1.25 mm. longae, connectivo angusto glabro; filamenta antica 5 mm. longa, 5.5 mm. supra corollae basem inserta, lateralia 5 mm. longa, 4.75 mm. supra corollae basem inserta, omnibus glabris; stamen posticum ad staminodium 3 mm. longum circa 1 mm. supra corollae basem insertum redactum. Discus calyce paulo brevior, apice crenulatus rarius 5-lobatus, glaber. Pistillum 1 cm. altum, glabrum, stylo cum stigmate 2.5 mm. longo, stigmate bilobato stylo paululo latiore. Capsula 2–2.5 cm. longa, inferne angustata, calyce styloque vel saltem huius parte basali persistentibus.

Yunnan. Forrest.

Perantha Forrestii, *Craib.*

Rhizoma breve, rectum, radices numerosas emittens. Folia in rosulam disposita, lanceolata, oblongo-elliptica, rarius ovata,

apice valde obtusa vel rotundata, basi cuneata, 3–5 cm. longa, 1.5–2.7 cm. lata, coriacea vel subcoriacea, supra viridia, pilis transverse septatis albidis marginem versus numerosioribus subscabridula, subtus dense cinnamomeo-lanata, indumento mox in laminam membranoideam agglutinato saepe albescente, nervis supra obscuris, costa subtus saepe prominente et nervis lateralibus utrinque paucis interdum subconspicuis, margine crenato-lobulata ; petioli saepissime 1.5–4 cm. longi, indumento ei foliorum paginae inferioris simili tecti. Pedunculi communes saepissime 2–5, ad 12 cm. longi, fusco-rubri vel purpurascentes, pilis transverse septatis glanduloso-capitatis tecti ; bracteae parvae ; pedicelli ad 2 cm. longi, pedunculo similes nisi tenuiores. Calyx ruber, 2 mm. longus, in segmenta 5 inter se subaequalia oblonga vel lanceolato-oblonga apice saepius obtusa vel fere rotundata rarius subacuta dorso margineque pilis glanduloso-capitatis instructa partitus. Corolla lutea, 2 cm. longa, extra pilis albis glanduloso-capitatis tecta ; tubus circa 14 mm. longus, ubi latissimus circa 5 mm. diametro ; labium posticum vix 7 mm. latum, fere ad medium 2-lobatum, anticum circa 1 cm. latum, 3-fidum, segmentis 2.75–3 mm. latis, labiis ambobus intra inferne breviter glanduloso-pubescentibus. Antherae anticae e corollae tubo paululo exsertae, laterales superantes, omnes circa 0.75–1 mm. longae, ovatae vel late oblongae ; filamenta lateralia 6 mm. supra corollae basem et circa 2 mm. infra antica inserta, omnia teretia, glabra vel pilis brevibus glanduloso-capitatis parcissime instructa, anticis lateralibus paulo sed distincte crassioribus. Discus 2 mm. longus, apice undulatus vel 5-lobulatus. Pistillum glabrum, corollae tubum aequans, stylo cum stigmate bilobulato circa 3 mm. longo. Capsula circa 3 cm. longa, inferne angustata, basi calyce persistente cincta.

Yunnan :—Kari pass, Mekong-Yantgze divide. 10,000 ft. Lat. 27° 40′ N. Plant of 3–6 inches. Flowers deep orange. Dry situations on limestone cliffs. Forrest. 13,058. Flr. et fr. Aug. 1914.

Mountains in the N.E. of the Yangtze bend. 10,000 ft. Lat. 27° 45′ N. Plant of 2–4 inches. Flowers deep orange. On rocks and cliffs in shady dry situations in side valleys. Forrest. 10,743. Flr. et fr. Aug. 1913.

Lu-lung-shan, 10,000 ft. Lat. 28° 10′ N. Forrest. 15,214. Flr. et fr. July 1917.

Cult. Hort. Bot. Reg. Edin. et Kew. Forrest. 12,716.

Perantha cordatula, *Craib.*

Rhizoma breve, crassum, rectum, radices numerosas emittens. Folia omnia basalia, oblongo-lanceolata vel oblongo-ovata,

apicem versus gradatim angustata, summo apice obtusa, basi rotundata subtruncatave, cordatula, usque ad 7 cm. longa et 3·7 cm. lata, chartacea vel coriaceo-chartacea, supra viridia, pilis albis transverse septatis marginem versus numerosioribus tecta, subtus densissime cinnamomeo-lanata, indumento mox in laminam membranoideam haud rarius albescentem agglutinato, nervis obscuris vel interdum costa et etiam nervis lateralibus paucis supra pallescentibus subconspicuis, costa subtus interdum prominente, margine irregulariter crenata vel serrato-crenata; petioli usque ad 13 cm. longi, indumento ei foliorum paginae inferioris simili tecti. Pedunculi communes 2–4, pluriflori, ad 12 cm. longi, substraminei, pilis transverse septatis glanduloso-capitatis tecti; bracteae inconspicuae; pedicelli 15- fere 20 mm. longi, indumento ei pedunculi simili tecti. Calyx viridis, in segmenta 5 inter se subaequalia plus minusve oblonga vel oblongo-lanceolata apice rotundata 2 mm. longa 0.75 mm. lata ciliata et dorso parce glanduloso-pubescentia distincte 3-nervia nervis lateralibus in nervum medianum infra apicem currentibus fissus. Corolla lutea, extra pilis glanduloso-capitatis subsparse instructa, 2.4 cm. longa; tubus circa 1.5 cm. longus, infra limbum angustatus, intra superne glanduloso-pubescens; labium posticum oblongo-obovatum, 8–9 mm. longum, 7 mm. latum, pilis glanduloso-capitatis subsparse ciliatum, ad medium 2-lobatum, intra praesertim inferne pilis glanduloso-capitatis instructum, anticum 7 mm. longum, ad basem 3-partitum, segmentis oblongis apice rotundatis vel retusis 3 mm. latis intra sparse glanduloso-pubescentibus margine subsparse glanduloso-ciliatis. Stamina corollae tubi apicem vix attingentia, antica lateralia 2 mm. superantia, filamentis anticis 6 mm. longis circa 7 mm. supra corollae basem insertis, lateralibus 6.5 mm. longis 5.75 mm. supra corollae basem insertis, omnibus glabris vel parce glanduloso-pubescentibus; stamen posticum ad staminodium circa 1 mm. longum, 1–2 mm. supra corollae basem insertum, redactum; antherae plus minusve ellipticae, 1 mm. longae, connectivo lato glabro. Discus calyci subaequilongus vel eo paululo longior, apice planus vel paulo undulatus, glaber. Pistillum 1.3 cm. altum; ovarium pilis longiusculis glanduloso-capitatis subdense instructum; stylus vix 3 mm. longus, indumento ei ovarii simili sed multo sparsius instructus; stigma stylo multo latius, bilobatum. Capsula 2.4–3 cm. longa, inferne angustata, ima basi disco calyceque persistentibus cincta, apice styli basem tantum vel haud rarius stylum integrum gerens.

Yunnan :—Mountains of the Chungtien plateau. 10,500 ft. Lat. 27° 55′ N. Plant of 4–8 inches. Flowers deep orange. On cliffs and humus-covered boulders in shady situations. **Forrest. 10,766. Flr. et fr. Aug. 1913.**

2055 **Petrocosmea Henryi,** *Craib,* a *P. minore,* Hemsl., antheris elongatis inter alia facillime distinguenda.

Herba acaulis, rhizomate brevi crasso radices numerosas emittente. Folia rosulata, saepissime ovata vel obovata, rarius fere orbicularia, apice obtusa rotundatave, basi plerumque parte triente inferiore cuneata, ad 2 cm. longa et 1.5 cm. lata, chartacea vel membranaceo-chartacea, supra pilis albis flaccidis transverse septatis sicco plus minusve adpressis instructa, subtus sericea, nervis lateralibus utrinque 3–5 supra obscuris subtus subconspicuis, nervulis omnino obscuris, margine crasse plus minusve regulariter paucidentata, dentibus satis distantibus plerumque apice rotundatis, longius albo-ciliata ; petioli usque ad 4 cm. longi, albo-pilosi, pilis mox inferne plus minusve brunnescentibus. Pedunculi (forsan haud semper) uniflori, circa 4.5 cm. longi, albo-pilosi, 6–10 mm. infra apicem bibracteolati. Calyx intra glaber, extra dense albo-pilosus, subaequaliter 5-fidus, segmentis circa 2.5 mm. longis et 0.75 mm. latis calloso-apiculatis. Corolla extra lobo mediano labii antici et labio postico marginem versus exceptis pilis transverse septatis saepe capitatis albo-pilosa ; tubus vix 2 mm. longus ; labium posticum ovato-deltoideum, apice emarginatum vel retusum, 5.5 mm. longum, 6.5 mm. latum, anticum 9 mm. longum, 10 mm. latum, 3-lobatum, lobis inter se aequalibus oblongis apice rotundatis vel truncato-rotundatis vix 5 mm. longis 3.75 mm. latis cum labio postico margine pilis transverse septatis capitatis longiusculis ciliatis. Antherae duae anticae fere 5 mm. longae, basi sagittatae, conniventes, filamentis ima basi corollae tubi insertis 3 mm. longis complanatis apicem versus gradatim paulo angustatis circa 1 mm. supra antherarum bases affixis glabris ; staminodia 3, duobus 1.5 mm. longis, postico aliis multo breviore, omnibus linearibus glabris. Ovarium subsericeum, 1.5 mm. altum, stylo 8 mm. longo superne glabro basem versus adpresse albo-piloso, stigmate parvo capitato. *P. minor,* Hemsl. in Hook. Ic. Pl., t. 2600 (1899), tabula et pro parte maxima descriptione et planta Hancockiana exclusis.

Mengtze ; cliffs in shade. 5000 feet. Single blue flowers. Henry. 9154.

Examination of Hancock's specimens proves that the figure in Hooker's Icones of *P. minor* was drawn from these plants and not from Henry's collections. As pointed out above, the two plants may be very readily distinguished by the shape of their anthers, those of *P. minor* proper being as figured short and elliptic, whereas those of Henry's plant are elongate and sagittate.

Tremacron, *Craib,* gen. nov., ab *Oreocharide,* Benth., corolla ventricoso-tubulosa, antherarum loculis divergentibus rimis mox confluentibus, a *Didissandra,* Clarke, antheris liberis recedit.

Calyx in segmenta 5, inter se subaequalia partitus, in fructu persistens. Corolla in alabastro cito apice aperta, lobis leviter incurvis ; tubus cylindricus, postice ventricoso-inflatus ; labium anticum postico paululo longius, e lobis tribus constitutum, posticum e lobis duobus constitutum, lobis omnibus brevibus rectis vel subrectis in alabastro imbricatis infimo exteriore. Stamina 4, paribus primo conspicue inaequilongis, duobus infimis cito longe exsertis, duobus lateralibus mox elongatis demum infimis subaequilongis, postico ad staminodium redacto vel omnino deficiente, filamentis prope corollae tubi basem affixis infra antheras paulo incrassatis ; antherarum loculi divergentes, inter se aequales, apice transverse dehiscentes, rimis confluentibus inaequaliter divisi. Ovarium superum, lineare, sessile, placentis bifidis valde intrusis marginibus revolutis facie exteriore multiovuliferis ; stylus distinctus, stigmate apice ambitu circulare quam stylo latiore bilobulato. Discus conspicuus, cylindricus, ovarii basem arcte cingens. Capsula linearis, ad nervum intraplacentarem nisi ad apicem basemque dehiscens ; semina minuta, fusiformia. Herbae nanae, rhizomate brevi crasso perenni, foliis rosulatis penninerviis haud glabris margine crenato-serratis vel etiam lobulatis. Inflorescentia cymoso-paniculata, pedunculata, glandulosa, floribus mediocribus pedicellatis.

Species duae quae inter alia ita distinguendae :—

Pistillum glabrum ; folia membranacea vel chartacea, saepissime longius petiolata . . . . *T. Forrestii*
Pistillum glanduloso-pubescens ; folia coriacea, petiolo brevi suffulta vel fere sessilia . . . . *T. Mairei*

2073

Tremacron Forrestii, *Craib,* sp. nov.

Herba perennis, 7–22 cm. alta ; rhizoma breve, rectum, crassum, radices numerosas fibrosas emittens. Folia anguste oblonga, oblongo-ovata vel saepius oblonga, apice obtusa, rotundata truncatave, basi in petiolum attenuata, sub anthesin usque ad 14 cm. longa et 6 cm. lata, sed saepissime circa 7 cm. longa et 3 cm. lata, chartacea, pagina utraque pilis albis longiusculis transverse septatis sicco adpressis subsparse tecta praetereaque pilis brunneis multo longioribus transverse pluriseptatis pagina superiore cito deciduis inferiore ad costam nervosque persistentibus ornata, nervis lateralibus utrinque 5–7 cum costa supra conspicuis subelevatis subtus prominentibus rectis vel subrectis angulo plerumque circa 45° e costa ortis intra marginem

furcatis, nervulis haud conspicuis, margine pilis longis brunneis densius ciliata, crasse crenato-serrata, interdum etiam lobulata, petiolo usque ad 5 cm. longo sed saepius circa 2 cm. longo pilis longioribus brunneis et brevioribus albis ut in foliis tecto suffulta. Scapi solitarii vel usque ad 5, sub anthesin ad 17 cm. alti, pilis longis brunneis et brevibus albis ut in foliis sed praesertim superne pilis brevioribus saepe glanduloso-capitatis tecti, flores numerosos cymoso-paniculatos gerentes ; bracteae saepissime 2–4 mm. rarius ad 8 mm. longae ; pedicelli usque ad 10 mm. longi, pilis albis brevibus eglandulosis et longioribus glanduloso-capitatis omnibus rectis tecti. Calycis segmenta 5, lanceolata vel lineari-lanceolata, obtusa, 3–3.5 mm. longa, 1 mm. lata, pilis rigidis inferioribus glanduloso-capitatis instructa, 3-nervia. Corolla lobis inclusis 13 mm. longa, extra et parte triente basali excepta intra subsparse glanduloso-puberulo-pubescens, pilis apice paucis acutis paucis glanduloso-capitatis ; labium posticum e lobis duobus in unum apice emarginatum 1.5 mm. longum basi 3.5 mm. latum connatis, anticum e lobis tribus mediano lateralibus paulo longiore et angustiore vix 2 mm. longo paulo ultra 2 mm. lato omnibus deltoideis vel ovato-deltoideis apice rotundatis margine papillosis vel saepe etiam sparse ciliatis constitutum. Filamenta 1.75–3 mm. e corollae tubi basi inserta, flore maturo inter se subaequalia, ad 16 mm. longa, parte quaterna basali excepta ut corolla pubescentia, sub antheris incrassata, loculis apice transverse dehiscentibus ; staminodium (an semper ?) deficiens. Discus 1 mm. altus. Pistillum glabrum, corollam cito subaequans, ovario 9 mm. alto, stylo stigmate bilobulato incluso 3 mm. longo.

On the Tong Shan in the Yantgze bend. Lat. 27° 20′. Plant of 3–9 inches. Flowers greenish-white. On shady moss-covered cliffs and rocks. 10,000 ft. Forrest. 10,804.

On the Yung-pe mountains. Lat. 26° 45′. Plant of 3–6 inches. Flowers very pale yellow. In shady situations on dry boulders and cliffs. 9000–10,000 ft. Forrest. 10,975.

Mekong Valley. Lat. 27° 40′. Plant of 4–9 inches. Flowers pale yellow. Shady rocks in side valleys. 10,000 ft. Forrest. 13,064.

2074

Tremacron Mairei, *Craib.*

Herba perennis, ad 19 cm. alta ; rhizoma breve, rectum, crassum, radices numerosas gerens. Folia dense rosulata, lanceolato-ovata vel ovata, apice obtusa, basi in petiolum ad 1.7 cm. longum angustata, ad 8 cm. longa et 4 cm. lata, crassa, supra pilis albis et paucioribus brunneis satis longis dense tecta, subtus pilis albis et praesertim ad nervos longioribus brunneis instructa, pilis omnibus satis rigidis transverse septatis, nervis lateralibus

utrinque 5–7 cum costa supra impressis subtus valde prominentibus, nervulis paucis subtus prominentibus, margine ciliata, parte basali excepta crasse crenato-serrata, saepe etiam lobulata, rarissime subintegra. Scapi saepe plures, ad 13 cm. alti, pilis longis brunneis transverse septatis divergentibus et brevibus albis saepe glanduloso-capitatis tecti; bracteae lineares, circa 4 mm. longae; pedicelli ad 13 mm. longi, rubescentes, pilis trimorphis longioribus haud glandulosis mediocribus glanduloso-capitatis et brevibus haud glanduloso-capitatis omnibus albis transverse septatis rectis tecti. Calycis segmenta lanceolata vel linearia, obtusa, 3.5–4 mm. longa, 1 mm. lata, pallide viridia, extra inferne pilis glanduloso-capitatis cum paucis longioribus haud glanduloso-capitatis ornata, parte triente superiore pilis longioribus rigidioribus haud glandulosis instructa, pilis omnibus transverse septatis, intra inferne glabra, superne pilis paucis albis satis rigidis instructa. Corolla viridialba, lobis rectis vel leviter incurvis inclusis postice 10–11 mm., antice 11–12 mm. longa, indumento ei *T. Forrestii* subsimili instructa; labium posticum e lobis duobus vix ad medium connatis apice rotundatis constitutum, 0.75 mm. longum, 3 mm. latum, anticum e lobis tribus altius connatis mediano lateralibus paululo longiore 1 mm. longo 1.75 mm. lato constitutum. Stamina fertilia 4, iis *T. Forrestii* similia; staminodium ad 1.5 mm. longum vel omnino deficiens. Pistillum ei *T. Forrestii* simile, sed breviter glanduloso-pubescens. Capsula ad 3 cm. longa, glabra, calyce persistente saepissime basi cincta.—? *Oreocharis Mairei*, Lévl. in Fedde, Rep. Nov. Sp., xi, 301 (1912).

Cult. Hort. Bot. Reg. Edin. e seminibus a Maire in Yunnan lectis.

Yunnan-sen district. Maire. 162.2581.

Tcheou-kia-tse-tong. 2550 m. Maire. 216 (1913).